

**COMBAT RATION NETWORK
FOR
TECHNOLOGY IMPLEMENTATION**

Multivac Installation

Final Technical Report STP 1014

Results and Accomplishments (March 1999)

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DEFENSE LOGISTICS AGENCY
8725 John J. Kingman Rd.
Fort Belvoir, VA 22060-6221

Contractor:
Rutgers, The State University of New Jersey
THE CENTER FOR ADVANCED FOOD TECHNOLOGY*
Cook College
N.J. Agricultural Experiment Station
New Brunswick, New Jersey 08903

Principal Investigator:
Neal Litman

Dr. John F. Coburn
Program Director

TEL: 732-445-6130
FAX: 732-445-6145

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DUAL USE

FLEXIBILITY

INTEGRATION

SHOP FLOOR

36.1 Objective

THERE WAS A NEED TO HAVE A MODERN HORIZONTAL FORM, FILL, SEAL MACHINE FOR COMBAT RATION POUCHES IN HOUSE AT THE DEMONSTRATION SITE, OF THE TYPE BEING USED IN INDUSTRY, TO MAKE DEMONSTRATIONS MORE MEANINGFUL. AT THE SAME TIME, THERE WAS AN OPPORTUNITY TO DOCUMENT THE STEPS INVOLVED IN ACQUIRING, MOVING, INSTALLING AND INTEGRATING THE EQUIPMENT INTO THE PRODUCT FLOWOF ANY MANUFACTURING ESTABLISHMENT. SUCH DOCUMENTATION WOULD BE A GUIDE FOR FUTURE ACTIVITIES.

37.1 Approach

SINCE THE DEMO SITE HAD PREVIOUS EXPERIENCE IN MOVING, INSTALLING AND INTEGRATING HFFS EQUIPMENT INTO THE DEMO SITE, AND SINCE THEY NEEDED A NEW AND MODERN MACHINE OF THE SAME TYPE AS USED BY RATION PRODUCERS, THEY WERE ASKED TO DOCUMENT THE PROCESS.

38.1 Progress

THE EQUIPMENT WAS MOVED IN, INSTALLED, AND SET UP FOR RUNNING. A VARIETY OF POUCHES WERE PRODUCED AS PART OF OTHER PROJECTS. SINCE THE MULTIVAC HFFS HAS EXCELLENT CONTROL FEATURES AND PROVIDES REPEATABILITY, THE PRODUCTS CAN BE USED AS TEST ARTICLES IN SPECIFIC EXPERIMENTAL EFFORTS. THE FINAL REPORT IS NEARING COMPLETION.

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Technology for Affordability

Focal Point

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This report covers the activities of CORANET STP #1014, Multivac Installation. Under the project, two GFE Multivac Horizontal Form-Fill-Seal packaging lines were re-deployed to align the equipment with current readiness requirements. Logistic and technical issues with moving the large machines were fully documented. Installation, Startup and Acceptance of the equipment were reported, including plant requirements and packaging materials data sheets.

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1.0 Introduction

The CORANET Demonstration Site at Rutgers University Food Manufacturing Technology Facility is equipped with commercial packaging lines (a Tiromat HFFS for MREs and a Raque Heat Sealer for polymeric trays) along with cooking capability and sufficient retort capacity to be able to demonstrate full-scale production of Combat Rations. In the case of MRE production, MRE production at producer sites is currently based on recently acquired Multivac HFFS machines rather than the Tiromat which CRAMTD purchased in 1990. In particular, the availability of a Multivac machine at the Demonstration Site will enhance the technology transfer of Machine Vision Inspection STP #1007 which is to take place at the Demonstration Site and which earlier would have been targeted at Tiromat equipment. The Delivery Order for STP #1014 was received on July 14, 1998.

2.0 Background

Multivac R530 packaging lines were purchase by the military to assure MRE readiness by adding to the surge capacity needed for war-time. As such, six lines were deployed at contract producer facilities. These machines are capable of producing non-military products, and therefore provide a dual use in peace-time as well. The machines are quite large and to relocate one to another manufacturing site requires planning for the necessary technical and logistic support. The military, in general, does not possess this in-house capability for undertaking a redeployment. Rutgers University has been involved with the rations manufacturing program and was directly involved with the development of HFFS for the MRE. Rutgers was therefore a qualified technical resource for managing the relocation of Multivac equipment.

The Demonstration Site for the CORANET Program requested a Multivac HFFS machine for high speed/high volume production during development and production runs, so that processes can be developed and demonstrated to the CORANET Partners using equipment with which they are familiar. The existing Government owned Tiromat equipment that is currently being used in the Demonstration Site can operated for other packaging projects for which its production capabilities can be demonstrated, such as thermoforming. This justification was the basis for relocation of one Multivac HFFS to Rutgers U. FMTF and the CORANET Demonstration Site.

3.0 Activities

3.1 Relocation of Land O'Frost Machine (Task 4.2.1)

Contracting arrangements were initiated with Multivac, Inc. for the relocation of the machine R530/#667 located at the Land O'Frost plant in Lansing, IL. The work scope included; a service technician on-site, shipping pallets (original pallets were not retained), rigging and transportation to San Antonio, TX. The cost quotation of \$27,680 and revised quotation of \$24,690 was deemed excessive and well over the budget. PM Russell Eggers concurred with Rutgers recommendation of delaying the relocation to explore other options. A Chicago based rigger, MSI Inc., was ultimately contracted for rigging and transportation, while Multivac insisted that Rutgers cover the expense of pallets that had already been fabricated and would provide a service technician to assist. The dates of the equipment relocation changed from September 28-29 to October 1-2, 1998, which were acceptable to Land O'Frost.

Utility connections were removed from the machine prior to the arrival of the Multivac technician. The following is a list of the steps taken by the technician:

1. Remove discharge conveyor and bottom web mandrel assembly.
2. Unbolt top forming station from machine frame, disconnect electrical wiring and pneumatic hoses.

3. Lift top forming station off machine, rigging straps paced through frame (top guard must be removed).
4. Disconnect vacuum hose and electrical wiring to roots blower and at junction box.
5. Loosen chain tension at forming station, break chain at motor drive and remove chain.
6. Remove bolts and brackets where machine halves join.
7. Attach clamps and shipping bars to legs.
8. Secure and cover loose wires and hoses, secure film unwind dancer arms.
9. Replace side covers, guards and support rails.

Shipping pallets delivered to Land OFrost by Multivac's shipping contractor were found to be inadequately constructed despite having been given construction drawings. Multivac was unable to get the pallets fixed quickly, so the pallets were discarded. This caused a serious problem because Land OFrost demanded the machine be removed over the weekend and would not allow any further rigging in the production area during weekdays. The rigging contractor agreed to build new pallets and complete the job on the weekend at premium labor rates. The additional rigger cost was offset by the refusal of the Multivac pallets. Detailed documentation for the equipment is contained the Machine Card found in Appendix 6.9.

3.2 Relocation of Sterling Machine (Task 4.2.2)

Multivac machine R530/#645 was held in storage at Sterling Foods in San Antonio, Texas on their original shipping pallets and ready for transportation. Multivac was hired to handle the transportation of the machine to Piscataway, NJ via their usual shipping service, Rotra Inc. Sterling Foods agreed to load the equipment onto a semi-trailer. The machinery was picked up at Sterling Foods on July 24, 1998 and delivered to Rutgers U. FMTF on August 5, 1998 after several truck delays.

3.3 Installation at FMT Facility (Task 4.2.3)

An order was placed for Lawson Mardon film in July, 1998. Since our order was for less than a minimum quantity, our order was held up until an MRE film order was placed by a retorter. The film was delivered on November 20, 1998. The film being the long lead item controlled the schedule for machine start up.

Riggers unloaded machine pieces August 5, 1998 and moved them to the production area. The two major pieces were lifted by forklift off wooden shipping pallets and connected together into their final position, location shown in Appendix 6.12. Steel angle beams were removed from the machine legs and with the shipping pallets placed in the warehouse for storage.

Electrical work was accomplished in September 1998. Electric conduit and wiring was run from the ceiling down to the Multivac and to the Busch vacuum pump. Cost for electrical work was \$4210.

Plumbing work was accomplished by a contractor from September to October 1998. The primary compressed air supply pipe above the ceiling had to be extended approximately 30 feet. The piping drop was located at the side of the main control panel, near the printer nozzle support. The pipe was fitted with a shut off valve and teed at the bottom. A two inch pipe was selected to provide ample volume of air to the Multivac without the need for a surge tank, as was required for the Tiromat installation. A short length of hose was used to connect the tee to the main control cabinet, the opposite side of the tee was connected to a length of one inch pipe fixed to the legs of the Multivac and led to the forming system control cabinet. Several utility connections were placed along the pipe run. A cold water supply was run adjacent to the air line with a shut off valve. The water was discharged to a nearby floor drain through half inch tubing. A three inch PVC pipe was used for connecting the vacuum pump to the Multivac. The vacuum pump was located approximately ten feet from the Multivac to minimize pipe length, a total of 30 feet of pipe was used. Total cost for plumbing was \$4325.

A Multivac service technician completed the machine installation from December 7 to December 18, 1998. The cost for a new machine installation was covered under the purchase of the machine and therefore not charged to Rutgers or this Short Term Project. For informational purposes, the work totaled 54 hours at a cost of \$5940 plus travel time and expenses of \$3827. The tasks performed:

1. Confirm proper utility connections.
2. Connect two machine sections; frame, wiring and pneumatics.
3. Install Top Web Forming Unit, Roots Blower Vacuum Booster, Vibrator, Film Mandrels and Videojet printer
4. Machine leveling
5. Install film transport chain
6. Ran machine, making adjustments
7. Basic operator and safety training

3.4 Acceptance Run (Task 4.2.4)

The Acceptance Test for Multivac #645 was held at Rutgers U. FMTF on January 6, 1999. The test objectives were verification of machine capability and performance, specifically meeting the packaging requirements of MIL-PRF-44073. The tests were conducted with Grilled Chicken Breast. Pouches were produced, inspected then retorted and evaluated by the QC technician. A random sampling of pouches were tested with the result that no defects were found and all MRE requirements were met. A batch of water filled pouches were also run to subject the machine to a lengthy run. The machine performed well, the only noted problem was the machine cycle rate being only 6.7 per minute, when 15 cycles per minute was the rated design. The low machine speed can be attributed to the operational parameters determined by Multivac. It is believed that these parameters were optimized for seals. Work would be required to significantly improve the machine cycle rate.

3.5 Engineering (Task 4.2.5)

Equipment information was gathered from Multivac to plan for relocation and machine installation. Multivac supplied the following documents:

1. Machine Card (Appendix 6.8)
2. Machine drawings (Lageplan)
3. Manual for Transport, Storage, Installation, Start-up/Shut-down (Appendices 6.2 and 6.3)
4. Shipping Descriptions and Weights

Contracts with riggers, electricians, plumbers and freight service were proceeded by initial vendor consultations and job quotations based on the equipment and facility requirements.

In the course of machine testing and Acceptance, Quality Control performed tests on pouches to verify MRE specification were satisfied.

Preliminary engineering of filling equipment and retort loading equipment was investigated with filling equipment vendors to determine the cost of retrofitting existing pilot plant filling systems: Solbern Net Weight filler, Oden Pump filler, and Adept robot.

4.0 Technical Discussion

4.1 Equipment Shipping and Rigging

The Multivac equipment is shipped as two large pieces along with additional parts, a description with weights are shown in Appendix 6.11. All pieces are shipped on wooden pallets to facilitate handling and protection. The entire machine and accessories ship in one large box

trailer, 52 feet long by 102 inches wide. As with most machinery containing electronic components, the Multivac should be transported in a trailer equipped with an air-ride suspension.

The Multivac is originally shipped from the factory in Germany on pallets and secured with shipping rails. The rails and leg clamps are to be warehoused for possible equipment relocation. The rails are steel angles with notches cut for each leg. The Multivac is lifted by the rails only, otherwise the machine frame can be damaged. The pallets are constructed from 6 x 6 inch lumber, running the length of each machine section with cross pieces nailed as decking.

4.2 Utilities

The following are utility requirements for the machine: Electrical - 220 volt, 3 phase, 60 cycle, 80 amps; Compressed air - 80 c.f.m. at 100 psi; Water - 50 gallons/hour, 50-80°F. These hookups are accomplished by local electrical and plumbing tradesmen. Depending on the availability of utilities, this will take 2-4 days of installation time.

4.3 Equipment Documentation and Training

Multivac supplies a complete set of documentation for the machine; Instruction Manual, Information for Service Technicians, Spare Parts Catalog, Description of the "Peer To Peer" Data Interface. These manuals indicate machine serial number, thus are specific and must be kept with each machine. Videojet supplies the following manuals as well: Owners Manual, Service Manual and Printer Reference Guide.

The service technician performing machine installation provides an introductory training session, covering the operator display panel, basic machine operation and machine safety features. Multivac holds a one week training course for key plant operators at its Kansas City facility. This course is included at no charge with the purchase of each machine.

4.4 Packaging Materials

Lawson-Mardon Singen is the supplier of MRE packaging film for the Multivac HFFS machine. The US agent is Winter-Wolff International, phone (516) 997-3300, Attn: Mr. Daniel Weil. Delivery lead times for MRE films are 2-4 months from order. Technical information and specification for the Lawson-Mardon Singen material can be found in Appendix 6.7. The formable bottom web consists of four plies: inner layer of polypropylene sealant, nylon, aluminum foil and oriented polypropylene. The top web consists of three layers; polypropylene sealant, aluminum foil and polyester. No other suppliers are approved at this time.

4.5 Tooling

The current tooling supplied with the machine is designed for producing MRE pouches with foil laminate. Both Multivac machines #645 and #667 have tooling upgrades installed. The tooling depth (package thickness) can be adjusted from 25mm to 49mm, but package depth is controlled by a combination of parameters: plug depth, forming mold depth, forming assist air pressure and forming duration. The maximum pouch volume is limited by the forming characteristic of the film. The machine has a top web forming unit installed, however there is no material presently available for this purpose and is unlikely the feature will be used for the production of MREs. Furthermore, the top web forming system reduces the Loading Area of the Multivac. The machine was delivered with an Air Assist Forming System that when installed can thermoform thin plastic materials into pouches.

To produce a semi-rigid package (such as a tray), new forming and sealing dies, and cutting tools will be required. An estimate of the cost to add new tooling is \$120,000; \$60,000 for new plug assist with pre-heat dies and \$60.00 for sealing dies and cutting tools.

The sealing tooling has been fabricated with gas ports to allow Modified Atmosphere Packaging capability. Valves and sensors are mounted, but not connected. Some additional hardware installation will be required as well as a revised control program which is supplied in a replaceable EPROM chip. This work accomplished by a Multivac Service Technician will cost approximately \$5,000.

4.6 Data Acquisition System

The communication interface makes it possible to create a data communication between the packaging machine and a personal computer (Gateway2000 P120). The interface hardware is a V24/RS232 serial port on the Multivac logic controller to an Allen-Bradley Communication Adapter running DH485 protocol. The adapter connects to the PC serial port. The PC can read and write data blocks to the Multivac controller program memory. The data available includes: machine status, diagnostics and fault messages, machine settings and readings, contents of program memory, machine terminal display and status of machine control inputs and outputs.

The PC as provided does not have application software installed. To use this capability, the plant must purchase a separate program or develop a custom in-house program. Multivac has been unresponsive regarding support of this product other than information provided in the manual "Description of the Peer To Peer Data Interface." The Data Acquisition System at the Demonstration Site is therefore unusable at this time.

4.7 Y2K Compliance

Multivac, Inc. has certified that R530 packaging machines do not use date based functions and therefore are unaffected by the change to the year 2000. They have made statements to further certify their business operation and suppliers, see Appendix 6.10. Peripheral equipment such as the Videojet printer are also compliant.

4.8 Multivac Modifications

An upgrade kit was installed in Multivac #645 when the machine was in Kansas City that included the latest tooling modifications. During start up of the machine at Rutgers U. FMTEF, the service technician discovered a number of defectively manufactured solenoid valves. Multivac replaced these valves at no charge under warranty.

4.9 Videojet Printer

Installation and start up of the Videojet Ink Jet printer was included with the purchase of new equipment at no additional cost. A Videojet service technician was dispatched as a new printer requires a significant time to assemble, load ink and calibrate. The printer has two print heads that traverse the top web during Multivac cycle dwell. The label is repeated for each of the four package lanes. To assure MRE pouches are labeled, the Multivac can be set to stop running should the printer detect a print problem. A Videojet manual was supplied with the unit.

4.10 Acceptance Test

An Acceptance Test consisted of producing approximately 200 pouches of grilled chicken breast. Twenty samples were selected randomly following retorting. Each pouch was examined for defects in accordance with Table II, 10 pouches were tested for residual gas volume and 10 pouches were tested for internal pressure. Pouches passed all inspections. In addition, residual gas averaged 8cc with a standard deviation of 0.9cc. Pouch volume prior to filling averaged 10.4 ounces (295cc).

4.11 Filling System Integration

Budget quotes were received from Solbern of \$75,000 for a Dumper mechanism compatible with the existing tumble filler and from Oden Corporation of \$51,139 for expanding our existing filler to 8 pouches. Oden also quoted on a new filler for the Multivac of \$130,978. The implementation of the Adept PackOne robot filling system would require a second robot to meet the requirements for maximum line speed of 120 packages per minute. Cost for the robot filling system retrofit is \$175,000. The inspection conveyor currently located at the Tiromat discharge can be relocated to the Multivac with room for the retort crate loaders.

5.0 Recommendations and Conclusion

The Multivac HFFS packaging line was purchased by the military with "war-stopper" funds justified by the mobilization needs for MRE rations. The machine serves this purpose very well. It produces a quality MRE package with additional benefits. The Multivac has superior headspace control and convenient horizontal pouch loading for placeable food items. This project has demonstrated the ability to redeploy the Multivac to another processing plant within weeks. This report covers the logistics issues for relocation and documents the most cost effective and appropriate procedures for accomplishing a redeployment.

The recommended team organization for accomplishing a relocation is shown in Appendix 6.13. This organization gives the Project Manager control of coordination, schedule and costs. This arrangement produced satisfactory results within the budget and schedule of this STP.

The use military transportation services DSC Richmond - JHA were also considered but not selected due to a very high cost quotation.

Appendix 6.1

Figure 1 - CORANET Short Term Project #1014
Multivac HFFS Installation
At Demonstration Site
Management Plan and Schedule

Task Name	WBS	1998						1999
		Jul	Aug	Sep	Oct	Nov	Dec	Jan
Relocate Land O'Frost Machine	4.2.1							
Relocate Sterling Machine	4.2.2							
Install at FMT Facility	4.2.3							
Acceptance Run	4.2.4							
Engineering	4.2.5							
Final Report	4.2.6							◇

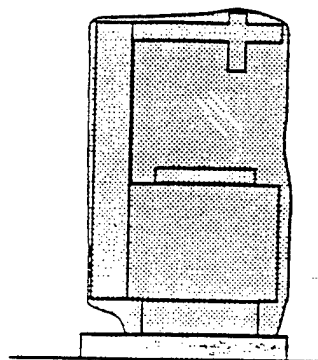
Appendix 6.2

Equipment Installation Manual

R 530

Contents

- Safety
- Installation
- Electrical connections
- Compressed air connections
- Cooling water connections
- Vacuum connections
- Gas connections
- Final checks
- Layout plan, connection diagram



Safety



**Danger that the machine
may topple over!
Danger of injury!**

- When assembling machine parts, use suitable lifting equipment or obtain the assistance of another person
- Follow the transport instructions
- Electrical connections should only be made by trained electricians and the relevant regulations must be observed
- When fitting the dies and additional equipment follow the safety instructions in the description

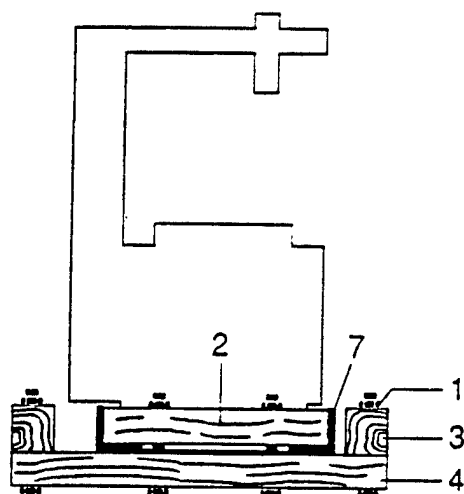
Installation

We recommend that you request the help of a Multivac service technician when installing/starting up a machine

- Undo all attachment screws (1)
- Remove the transverse (2) and longitudinal (3) wooden supports
- Use a fork-lift truck to lift the machine slowly by the L-bars (7) until the crossbeam (4) is accessible

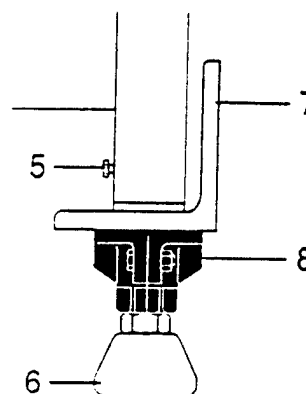
Unpacking, preparation

- Remove the outer packaging (film, board, wooden case)
- Remove all transport safety devices
- Remove accessory equipment supplied with the machine



III. 1 Machine secured on square wooden supports and L-bars

- | | |
|--------------------------------|--------------------|
| 1 Attachment screws | 5 Clamping screw |
| 2 Transverse wooden supports | 6 Machine foot |
| 3 Longitudinal wooden supports | 7 L-bars |
| 4 Crossbeam | 8 Clamping element |



III. 2 Machine foot

- Undo the clamping screws (5)
- Loosen all the clamping elements (8) using an SW 41 open-ended spanner and screw them out uniformly
- Put the machine down on the floor carefully
- Screw machine feet down to the floor where necessary
- Remove L-bars (7)
- Remove crossbeams (4)

Assembling the packaging machine

These instructions only need to be followed if the machine was delivered in parts.

If this is not the case, miss out this section and continue with the "Alignment" section.

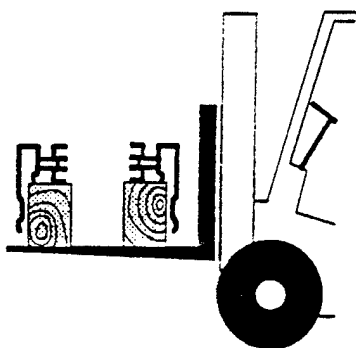


Follow the instructions
in the "Safety" section!

Attachment of the extension

"Extension" means the extensions at the discharge end of the machine.

The instructions in this section can be disregarded if the machine does not have an extension.



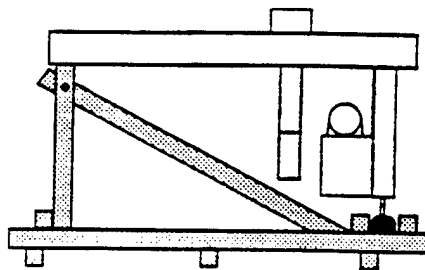
III. 3 Extensions with wooden supports

Important note!

The extension must not be allowed to lie on the forks - there is a danger that it might be dented.

* Depends on the machine configuration

- Make sure there are wooden supports between the extension and the forks
- Lift the extension carefully with a fork-lift truck

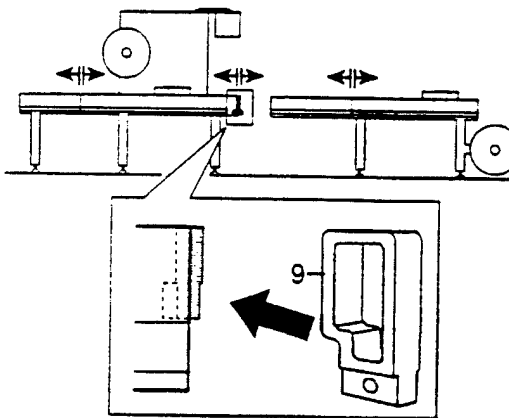


III. 4 Extension with wooden support

- Position the extension at the discharge end of the machine. Danger that it may topple over! Put a wooden support underneath it*
- Align the extension with the machine

Fitting alignment sections

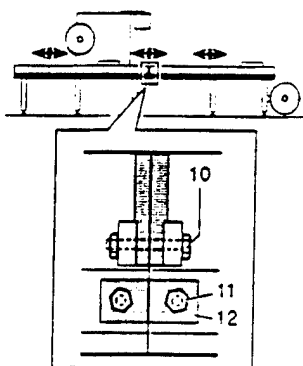
- Fit alignment sections (9) at the connection points
- Carefully join the parts of the machine together



III. 5 Joining the machine together

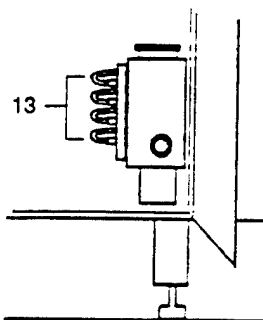
03 Transport, storage, installation, start-up/shut-down

- Insert and tighten screws (10) directly below the connection points
- Plug all the plugs (14) in the distribution cabinet



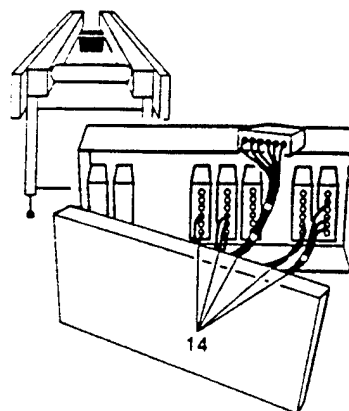
III. 6 Connection points

- Attach the metal bracket (12) with screws (11)
- Remove the wooden support*
- Align the machine in accordance with the instructions given later in this manual
- Connect hoses correctly by referring to their markings
- Connect the compressed air hoses for the cutting units



III. 7 Oil container for automatic chain lubrication

- Connect the hoses for automatic chain lubrication (13) to the distributor in the main control cabinet



III. 8 Machine with distribution cabinet

Important note!

Never pull on the cables to remove the plugs.
Do not use force when connecting plug-in connections.

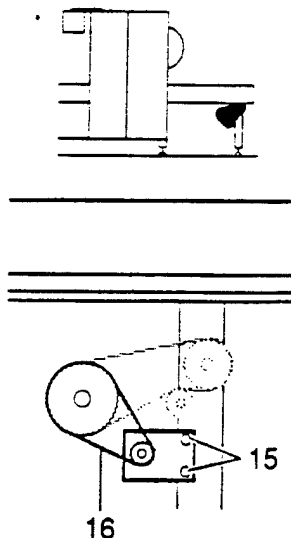
- If there is a vacuum pump for forming, connect the cable in the terminal box of the pump.

Important note!

Check the direction of pump rotation before switching on the machine

- Connect the drive motor cable in the main control cabinet (see electrical wiring diagram)
- Connect the cables of the cutting units, the vacuum trim removal unit, the edge trim rewind unit etc. in the main control cabinet (see electrical wiring diagram)

* Depends on the machine configuration

Fitting the rotary shaft encoder**III.9 Fitting the rotary shaft encoder**

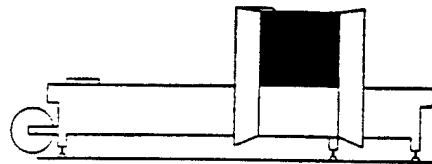
- Attach the rotary shaft encoder with screws (15); do not tighten them
- Put the toothed belt (16) on
- Tighten the toothed belt and the screws (instructions on this can be found in chapter 05 entitled "Advance drive - tightening the toothed belt")
- Fit the cables in the holders provided for this purpose and secure them with a plastic clip if necessary

Important note!

The cables must not touch the toothed belt

Connecting the magnetic reed switches

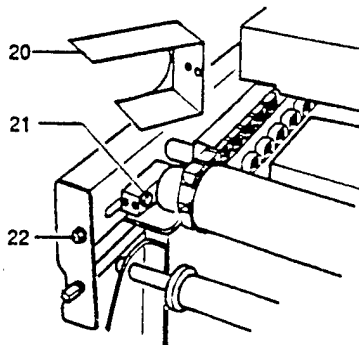
Connect the magnetic reed switches to the magnetic reed switch terminal strip in the main control cabinet (see the electrical wiring diagram). Note the markings on the individual cables.



III. 13 Connection terminals in the main control cabinet

Installation of the film transport chain

- Remove the chain guard (20)
- Undo the clamping screw (21)
- Move the sprocket wheel towards the centre of the machine by turning the tensioning screw (22) to the left

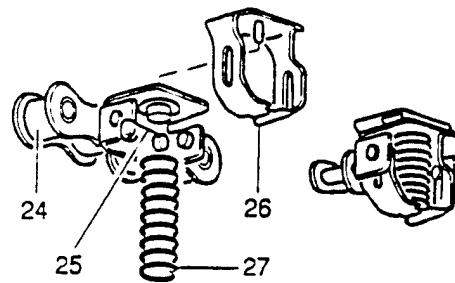


III. 11 Installation of the film transport chain

- Pull the chain tight until the ends of the chain touch

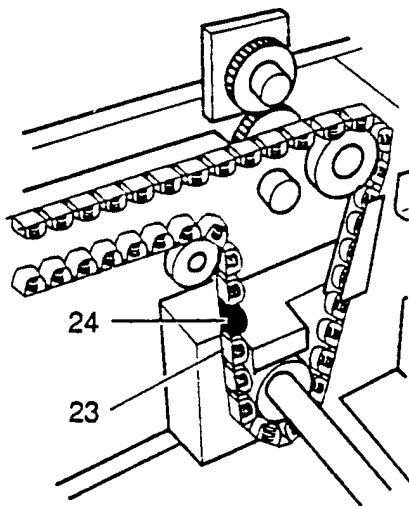
Note:

Make sure the ends of the chain touch



III. 13 Assembly of the film transport chain

- Insert the chain into the chain guide rails on both sides and pull it towards the drive
- The ends of the chain (23) must be easily accessible



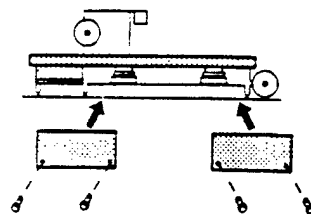
III. 12 Positioning of the ends of the chain

- Fit the chain link and the connecting link (24) together (red marking)
- Clamp the locking wire (25) in position
- Fit the chain clamp (26)
- Put on the spring (27)
- Tighten the chain in accordance with the description in chapter 15

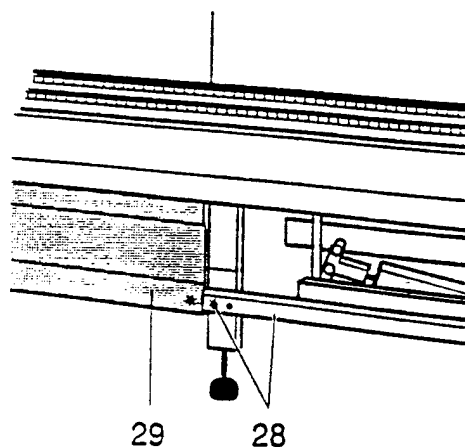
03 Transport, storage, installation, start-up/shut-down

Attachment of the discharge conveyor

Instructions on this can be found in the description of the discharge conveyor in chapter 05

**Checking, fitting of guards, panels etc.**

- Check the oil level of the pumps, central lubrication system and maintenance units
- Secure bars (28) at the connection points
- Fit the side panelling (28)
- Put in the support tray and the discharge plate
- Fit the die guards



Ill. 14 Fitting the side panelling

03 Transport, storage, installation, start-up/shut-down

Alignment

- The machine does not need any foundations and does not have to be attached to the floor etc.
- Make sure there is easy access to the control cabinets

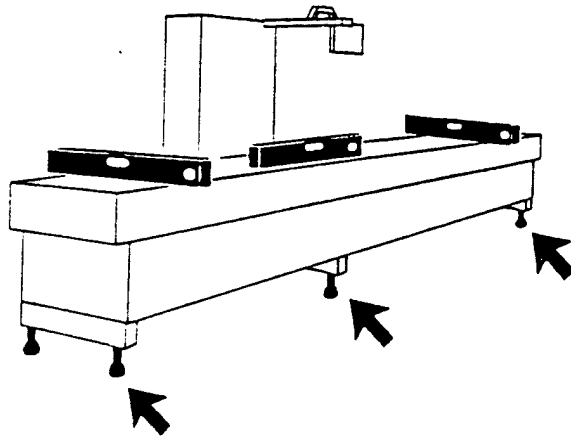
Note:

Always align the machine with a spirit level - a machine spirit level if one is available

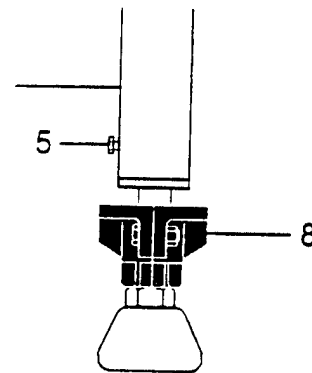
- Align the machine horizontally in machine and cross direction using a spirit level (III. 15)
- Undo the clamping screw (5)
- Adjust the clamping element (8) using an open-ended spanner
- Tighten the clamping screw (5)
- Do not remove the clamping element (8) until the alignment process has been completed
- Keep the L-bars and the clamping element for subsequent transport operations

Important note!

The machine can be damaged if it is not aligned properly.



III. 15 Alignment of the machine



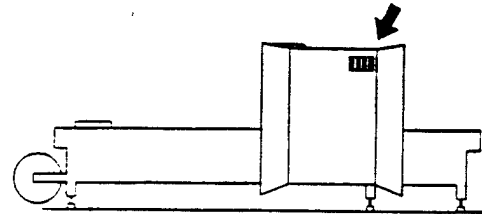
III. 16 Machine foot

Electrical connections

Mains connection



**High voltage -
Life in danger**

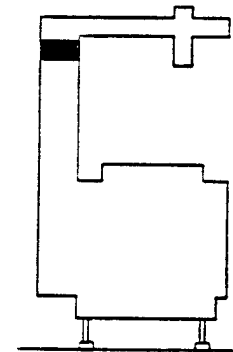


III. 17 Electrical connection

Important Instructions

- All work should be carried out by **trained electricians**
- Observe the relevant regulations and directives
- Connected load figures can be found on the nameplate
- Connect the mains cable in accordance with the information given on the terminals, making sure the electrical wiring diagrams are observed

Tolerance of the mains voltage $\pm 10\%$



III. 18 Nameplate

Cross-section of the mains cable

Nominal current * A	25A	36A	50A	63A	80A
Cross-section mm ²	4	6	10	16	25

Compressed air connections

Compressed air in the supply line

min 7 bar
max 10 bar

Compressed air consumption

The compressed air consumption depends on the machine equipment and the operating speed (cycles per minute). A calculation can be made at the factory on request.

Characteristics of the compressed air

- Filter element 25 microns (to be fitted by the customer)
- Moisture content max 1 g/m³

Recommendation:

If there are temperatures of **3°C and higher** in the compressed air network, the compressor should be followed by a refrigeration drier.

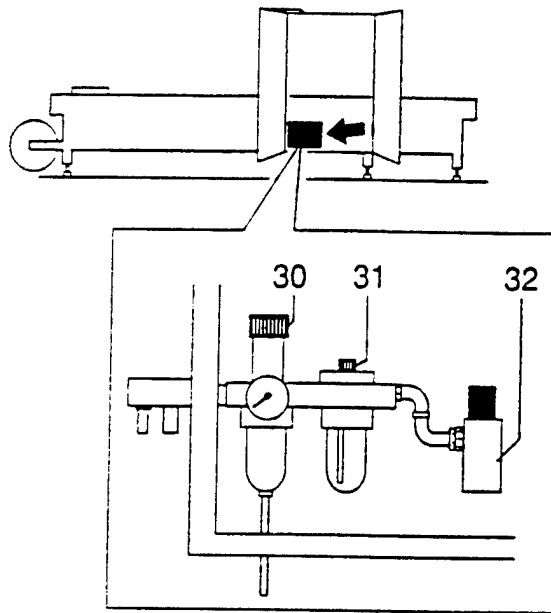
In the case of temperatures **below 3°C**, the compressor should be followed by an adsorption drier.

Installation

Lay a compressed air line of 3/4" to 1". Blow it out thoroughly before starting operation.

The standard compressed air connection is in the main control cabinet.

Depending on the machine equipment, there may be a further connection in the control cabinet at the infeed end of the machine (see Ill. 21).



Ill. 21 Maintenance unit

Setting

Operating air pressure: max 7 bar

Setting on the pressure regulation valve (30):

- Turning **clockwise**:
Air pressure is increased
- Turning **counter-clockwise**:
Air pressure is reduced

Notes

A pressure monitor is set in such a way when the machine is supplied that the machine stops when the pressure drops **below 5 bar**. The main valve (32) shuts the compressed air supply off completely, when the main switch is turned to 0.

This does not apply in particular to:

- Control valves for evacuation and forming
- Equipment for blowing out the water circuit

A fault message appears on the display

Amount of oil

Setting the amount of oil on the lubricator (31):

- Turning **clockwise**:
Amount of oil is increased
- Turning **counter-clockwise**:
Amount of oil is reduced

Approximate figure: about 1 drip/5 min.

Vacuum connections for external vacuum pumps

There are machine configurations which are designed for an external vacuum supply system. In such cases there may be one or more vacuum connections.

Important note!

Among other things, the shelf life of food packs depends on the maximum final vacuum level (and the nominal capacity) of the pump. Select suitable pumps.

General instructions

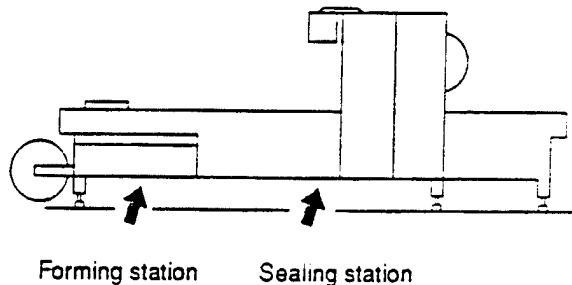
- Use only the special hose supplied with the machine as the vacuum line.
- Where possible, avoid sharp curves, corners and long supply lines. Every change in direction leads to a reduction in evacuation efficiency.
- Read the instruction manual supplied by the pump manufacturer before starting operation

Basic principles

External vacuum pumps should be located as close as possible to the machine. The vacuum hose should be no longer than 10 m at the most.

Location of the connection

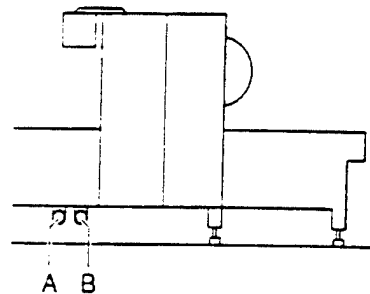
The external vacuum connections are always near the places marked with an arrow in Ill. 22. Consult the connection diagram about this as well.



Ill. 22 Vacuum connections

Evacuation via a central vacuum system

In such cases there are two connections for evacuation on the sealing die. Note the distinction between APPROXIMATE/PRECISE vacuum (see chapter 09).



Ill. 23 Vacuum connections with a central vacuum system

A = Precise vacuum

B = Approximate vacuum

Evacuation with a Roots pump

A Roots pump must **not** be operated without a **backing pump**. The machine control system is designed in such a way that the Roots pump cannot start without the backing pump being switched on.

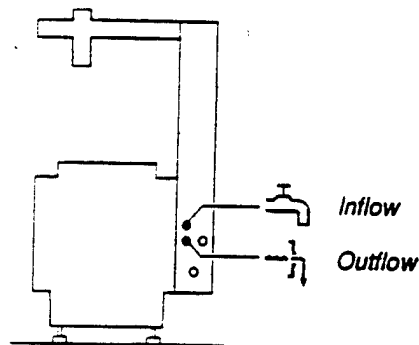
The connection line between the Roots pump and the backing pump is 1 1/2" or 2", depending on the size of the backing pump.

Bush Vacuum SHP
 piece # 5
 Serial # E20118

Cooling water connections

Requirements on the cooling water

- Max. inflow temperature 15°C
- Filter element 50 microns
- pH level 7 ... 7,5
- Content of:
 - Iron (Fe) and manganese (Mn) < 0,1 mg/l
 - Calcium (Ca) 22 ... 50 mg/l
 - Magnesium (Mg) 13 ... 30 mg/l
 - Free chlorine (Cl) < 0,1 mg/l



III. 24 Cooling water inflow and outflow

The water supply authorities responsible can provide information about water composition.

Cooling water requirement

180 - 300 l/hour of cooling water at 15°C are required, depending on die size and the built-in vacuum pumps.

If processed (demineralized) water is to be used in a water circuit, the pH level needs to be checked regularly.

If the pH level is in the alkaline range (i.e. higher than 7,5), it is necessary to add e.g. powdered citric acid to prevent the formation of aluminium hydroxide $Al(OH)_3$.

This would lead to deposits and - if the worst came to the worst - to blockage of the water lines.

The optimum pH level setting is between 6 and 7. Please consult MULTIVAC or its agent about installation of a recooling circuit.

Notes

- When installing new lines, use a nominal width of 1/2". Blow them out thoroughly before starting operation.
- Water outflow should be downwards to make sure that water left in the system does not flow back.
- If water costs are high, recooling in a self-contained circuit may be more economic. This also reduces calcium deposits.

Setting

Water pressure in the supply line:

min 1,5 bar
max 4,5 bar

Flow

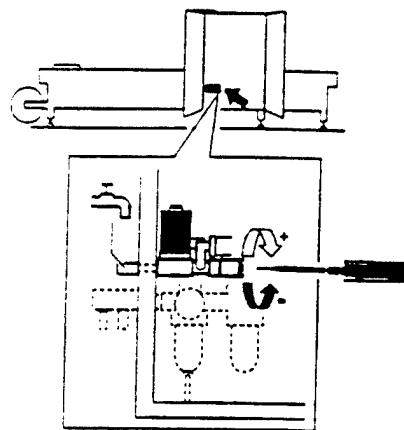
The water flow volume is set at the factory based on a water inflow temperature of 10°C (see III. 25)

Correction:

- + flow volume is **increased**
- flow volume is **reduced**

Note:

Condensation may form if the cooling water flow volume is too high. The die top should be so warm that it can still be touched.

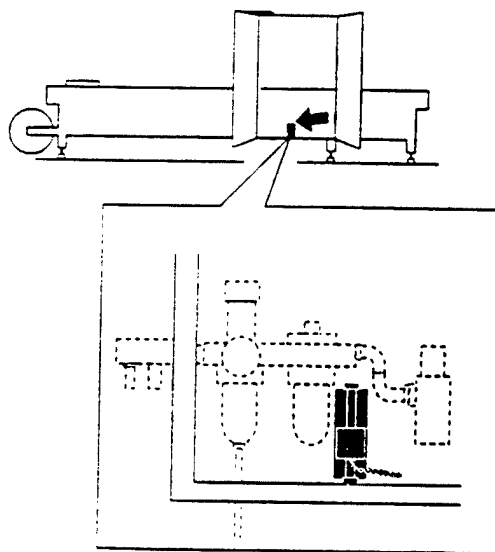


III. 25 Regulation of water flow

A **flow monitor** is fitted in the outflow system (see III. 26)

It is set so that the machine stops when the flow volume is **less than 2 l/min.**

Do not change the setting of the flow monitor!



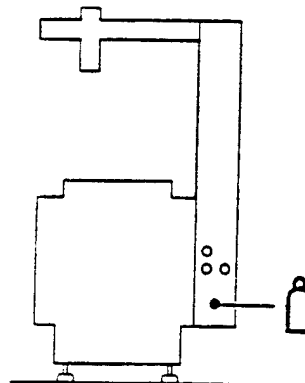
III. 26 Water flow monitor

Shutting off the cooling water

- Turn the main switch to 0
A diaphragm valve shuts the water supply off.

Gas connections

This section can be disregarded in the case of machines that do not have a gas flushing unit. Information on the kind/mixing ratio of the gas required can be obtained from your gas supplier or via the Multivac organisation.



III. 27 Gas connection

Location

The standard gas connection (34) is on the main control cabinet, Cross section of the gas supply pipe 1/2".

Safety



**DANGER OF SUFFOCATION
DANGER OF EXPLOSION**

- Observe the safety regulations
- Input pressure must **not exceed 7 bar**
- Ventilate rooms well, avoid gas accumulation
- Shut off the gas supply when machine operation stops

Note:

The gases do not smell!

- When using oxygen:
- Do not smoke
- Make sure there is no oil and grease on parts such as fittings, valves and hoses through which gas flows
- Move flammable objects out of the room

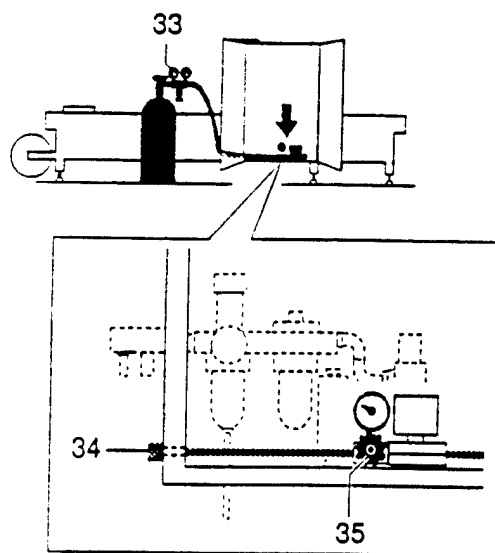
Setting

Set the gas pressure on the precise gas regulation valve on the gas bottle (33):

- max. 7 bar

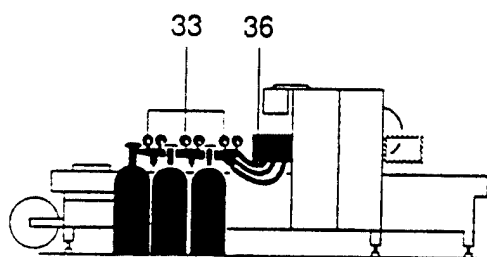
On the precise gas regulation valve (35) in the main control cabinet:

- Setting depends on the product and pack size.



III. 28 Precise gas regulation valve/gas connection

If there is a gas mixing unit (36), read the description of it in chapter 09.



III. 29 Gas connection with gas mixing unit

Final checks

When all the preparations have been completed, check the following points again:

- Is compressed air available and is the compressor switched on?
- Is cooling water available and is the shut-off valve open?
- Is a water outflow facility (unpressurized) available?
- Is gas available* and is the shut-off valve open?

Oil level check

- Vacuum pump
- Maintenance unit
- Automatic chain lubrication system*

Grease level check

- Automatic grease lubrication for the lifting unit*

If the packaging machine was delivered in parts

- Check the phase control in the main control cabinet
- Check the direction of rotation of the vacuum pumps*

* *Depends on the machine configuration*

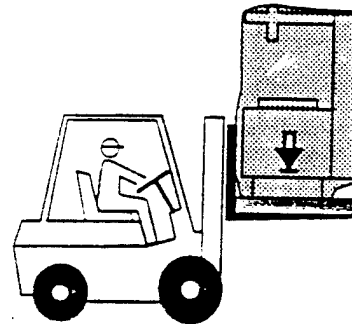
Appendix 6.3

Equipment Transportation Manual

R 530

Contents

- Safety
- Types of packaging/forms of transport
- Storage
- Preparations for transport



III. 1 Transport by a fork-lift truck

Safety



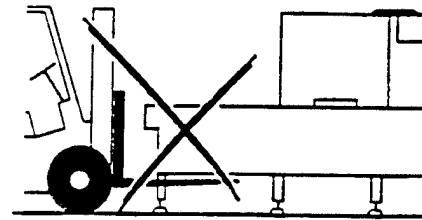
Lifting of loads -
Extremely dangerous!

- Observe the safety regulations
- Use suitable lifting equipment
- Note the weight information provided on the packaging or in the shipping documents
- Danger that the load may topple over
Note where the centre of gravity is

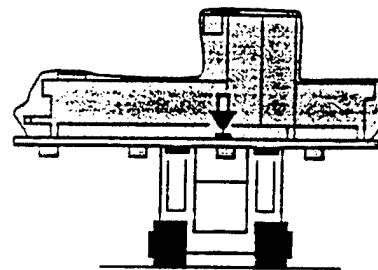
Type of packaging/forms of transport

Machine unpackaged or protected with film (fork-lift truck, lorry)

- When new machines leave the factory, they are supported by an L-bar and wood construction. The L-bars are essential for subsequent transport.
- Position the forks of the fork-lift truck as far apart as possible.
- Keep a particularly close eye on parts that project (e.g. film unwind unit, edge trim rewind unit, discharge conveyor).
- Never lift a machine by the discharge extension.
- When using a fork-lift truck, approach the machine from the operator's side.
- Determine the centre of gravity of the machine. It may not be in the middle of the machine.



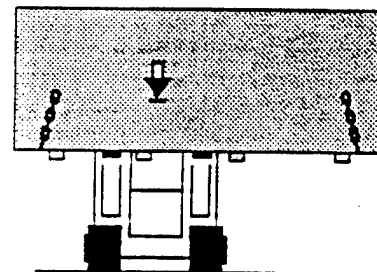
III. 2 Machine with discharge end extension



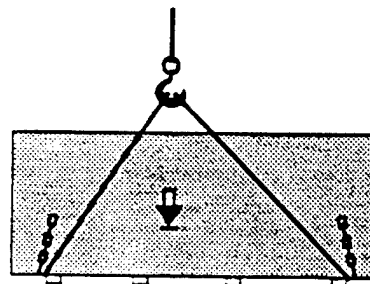
III. 3 Unpackaged machine

Carton (air freight) or wooden crate (sea freight)

- Lifting with a fork-lift truck: note the centre of gravity arrow.
- Lifting with a lifting unit: note the chain symbols.



III. 4 Machine lifted by a fork-lift truck



III. 5 Machine lifted by a lifting unit

Storage

Storage conditions

- In the original packaging or covered with a sheet of film
- Dry conditions
- Not in an aggressive atmosphere
- Never in temperatures below 0°C, as serious damage could be caused in the water circuit

Preparation for transport

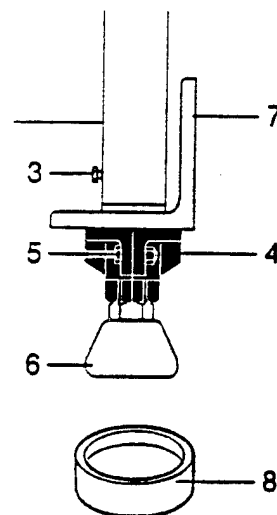
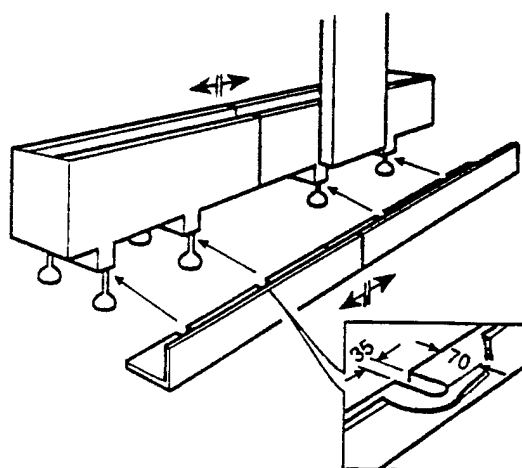
- Undo all the clamping screws (3)
- Fit the clamping elements (4)
- Tighten the screws (5)
- Fit the L-bars (7) supplied with the machine from both sides

If they are no longer available:

- Prepare an L-bar with dimensions of at least 120 x 120 x 12 (length depends on the machine) for each side
Make a slit for each foot (see Ill. 6)
- Screw the machine foot (6) on the clamping element (4) to the stop using an open-ended spanner

Note:

If a machine needs to be moved on frequent occasions, MULTIVAC can supply special foot supports (8). See the spare parts list for details.



Ill. 6 Fitting transport bars

Appendix 6.4

Equipment Set Up - Rutgers U. FMTF

RUTGERS

MULTIVAC
R530/6358 LINE DISPLAY
4 TRACK X 2 ROWPROGRAM
MEMORY # 0DATE: 5/1/78 PRODUCT

SELECTION FORMING DIE

- NR: 6
- 0 ALL FUNCTIONS OFF 6 ALUFOIL
- 1 STANDARD
- 2 WITH PREHEATING
- 3 PLUG BEFORE AIR
- 4 AIR BEFORE PLUG 11 DIE LIFTING OFF
- 5 POSIFORM

TOP WEB FORMING DIE

- NR: //
- 0 ALL FUNCTIONS OFF
- 1 STANDARD
-
-
- 11 DIE LIFT OFF

SELECTION SEALING DIE

- NR: 3
- 0 ALL FUNCTIONS OFF 6 VAC & GAS
- 1 VACUUM TEST 7 BY GAUGE + TR
- 2 EVAC. TIMER CONT. 8
- 3 EVAC. GAUGE + TR. 9
- 4 SKIN, SHRINK 10 SPF
- 5 VAC & GAS BY TR. 11 DIE LIFT. OFF

TIMERS: FORMING BOTTOM FILM

- TIMER #
- 0.00s DELAY AIR - PLUG 4
- 0.00s PREFORMING POSIFORM 5
- 0.00s DELAY PLUG RETURN 6
- 0.00s HEATING 16 0.00s FILL TIME 2
- 2.0s FORMING 17 0.75s FILL TIME 3
- 0.0s PLUG 18

TIMERS: FORMING TOP FILM

- TIMER #
- 0.0s HEATING 40 <- 0.00s FILL 11
- 0.0s FORMING 41 <- 0.00s FILL 12

TIMER: EVAC., GAS, SEALING 1

- TIMER #
- 0.0s EVACUATION 25
- 0.0s GASING 26
- 1.5s SEALING 27
- 0.0s VACUUM PRODUCT 14
- 0.0s DELAY SHRINKING 15
- 0.0s SHRINKING

TIMERS: OTHERS

300 s GREASE

TIMER #

46

TIMER: OTHERS

- TIMER #
- 0.3 s SAFETY TIME FORMING 19
- 0.2 s SAFETY TIME SEALING 21
- 3.0 s DELAY SEAL TO VENTILATION 28
- 1.0 s DELAY CUTTING 37
- 3.0 s CUTTING 38
- 15.0s DIAGNOSTIC TIME 47

TEMPERATURE		SET	-	+	STOP
ZONE					
0	PRE-HEATING	0	10	10	0
1	-	0	10	10	0
2	TOP WEB HEATING	20	10	10	0
3	STEAM	20	10	10	0
4	SKIN	0	10	10	0
5	SEALING	230	10	10	0

TEMPERATURE: VALUES Xp(%) Tv(s)

ZONE	Xp	Tv
0	5.0	20
1	5.0	20
2	5.0	20
3	5.0	20
4	5.0	20
5	5.0	20

TEMPERATURE MONITOR		SET	-	+	STOP
ZONE					
6	SEALING 1	230	10	10	0
7	SEALING 2	230	10	10	0
8	SEALING 3	230	10	10	0
9	SEALING 4	230	10	10	0
10	-	0	10	10	0
11	COOLING WATER	30	10	10	0

SENSORS		ACTUAL
CHANNEL		
12	VAC SENSOR	VAC 100
13	VAC. TANK	VAC 0
14	PRE-VENTIL.	MAX 200
15	SEAL PRE	MIN 500

MULTIVAC
R530/6358 LINE DISPLAY PROGRAM
4 TRACK X 2 ROW MEMORY 0AMERIQUEAL
DATE: 5/12/98 PRODUCT

FUNCTIONS : ON/OFF REGISTER MARK CONTROL: 0 1=ADVANCE, 0=BRAKE 0 CUTTING QRP1 / LOADING GRID 0 CUTTING QRP2 / STOP: 0=DIE, 1=ADVANCE / CUTTING STS1 / AIR CLAMP. FORMING DIE / CUTTING STS2 0 RED MEAT PROGRAM 0 SYNC. 1 / BLOWING CHAIN 0 SYNC. 2			REGULATORS MAIN AIR PRESSURE 100 PSI SEAL PRESSURE 25Y1 5.0 BAR THROTTLE VACUUM REGULATOR 100 %		
FUNCTIONS 2: ON/OFF / COOLING STATION 0 / HOLE PUNCH 0 0 0=PUNCH TOP / 1=PUNCH BOTTOM 0 0 AIR CLAMPING FORMING DIE TOP WEB 0 0 - 0 0 - 0					
COUNTER NO. R/S ACTUAL SETTING 0 GREASE 5000 1 CHAIN LUBRICATION 500 2 LUBRICATION RUN 208 3 CYCLES RESETTABLE 4 CYCLES TOTAL 5 OPERATION TIME			COUNTER 2 EDGE TRIM STOP SETTING 2		
ADVANCE ADVANCE SETTING ACTUAL ADVANCE 375 . 0 mm SPEED 50 % ACCELERATION 50 % DIE START 0 . 0 mm REGISTER MARK TOP 0 . 0 mm REGISTER MARK BOTTOM 0 . 0 mm			SYNCHRONIZATION 0 . 5 s SYNC 1 OUTPUT, PULSE WIDTH 33 0 . 5 s SYNC 2 OUTPUT, PULSE WIDTH 34 0 . 5 s SYNC 3 OUTPUT, DELAYED 35 5 s WAIT FOR SYNC FEEDBACK 32 0 WAIT FOR SYNC 2 WITH CLOSED DIE ? 0/1 : NO/YES		
			DIE LIFTING OPENING GAP FORMING DIE (1 - 8) 3 OPENING GAP SEALING DIE (1 - 8) 3 OPENING GAP TOP WEB (1 - 8) 3 CUSHIONING 0 . 08 s DELAY CUSHIONING 0 . 28 s		

 NOTES: _____

FORMING DEPTH _____ mm

SEALING DEPTH _____ mm

Appendix 6.5

Equipment Data Sheets;
Multivac R530 Set Up, Program Log, QC Record

MULTIVAC
R530/645

DATE: _____ PRODUCT _____

8 LINE DISPLAY
4 TRACK X 2 ROWPROGRAM
MEMORY # _____

SELECTION FORMING DIE NR: _____ 0 ALL FUNCTIONS OFF 6 ALUFOIL 1 STANDARD 2 WITH PREHEATING 3 PLUG BEFORE AIR 4 AIR BEFORE PLUG 11 DIE LIFTING 5 POSIFORM OFF				TOP WEB FORMING DIE NR: _____ 0 ALL FUNCTIONS OFF 1 STANDARD - - - 11 DIE LIFT OFF			
SELECTION SEALING DIE NR: _____ 0 ALL FUNCTIONS OFF 6 VAC & GAS 1 VACUUM TEST BY GAUGE + TR 2 EVAC. TIMER CONTROLLED 3 EVAC. GAUGE + TIMER 4 SKIN, SHRINK 11 DIE LIFTING 5 VAC & GAS BY TIMER OFF				TIMERS: FORMING BOTTOM FILM TIMER # _ _ s DELAY AIR - PLUG 4 _ _ s PREFORMING POSIFORM 5 _ _ s DELAY PLUG RETURN 6 _ _ s HEATING 16 _ _ s FILL TIME 2 _ _ s FORMING 17 _ _ s FILL TIME 3 _ _ s PLUG 18			
TIMERS: FORMING TOP FILM TIMER # _ _ s HEATING 40 <- _ _ s FILL 11 _ _ s FORMING 41 <- _ _ s FILL 12				TIMER: EVAC., GAS, SEALING 1 TIMER # _ _ s EVACUATION 25 _ _ s GASING 26 _ _ s SEALING 27 0.0 s - _ _ s DELAY SHRINKING 14 _ _ s SHRINKING 15			
TIMERS: OTHERS TIMER # 280 s GREASE 46				TIMER: OTHERS TIMER # _ _ s SAFETY TIME FORMING 19 _ _ s SAFETY TIME SEALING 21 _ _ s DELAY SEAL TO VENTILATION 28 _ _ s DELAY CUTTING 37 _ _ s CUTTING 38 _ _ s DIAGNOSTIC TIME 47			
TEMPERATURE ZONE SET - + STOP 0 PRE-HEATING _ _ _ _ 1 - 0 10 10 0 2 TOP WEB HEATING _ _ _ _ 3 - 0 10 10 0 4 - 0 10 10 0 5 SEALING _ _ _ _				TEMPERATURE: VALUES Xp(%) Tv(s) ZONE Xp Tv 0 5.0 20 1 5.0 20 2 5.0 20 3 5.0 20 4 5.0 20 5 5.0 20			
TEMPERATURE MONITOR ZONE SET - + STOP 6 SEALING 1 _ _ _ _ 7 SEALING 2 _ _ _ _ 8 SEALING 3 _ _ _ _ 9 SEALING 4 _ _ _ _ 10 - 0 10 10 0 11 COOLING WATER _ _ _ _				SENSORS CHANNEL ACTUAL 12 VAC SENSOR VAC GAS 13 PRE-VENT. MAX 14 ---- 0 15 SEAL PRESSURE MIN			

WORNICK COMPANY
DATE: PRODUCT

```

8 LINE DISPLAY      PROGRAM
4 TRACK X 2 ROW     MEMORY

```

<p>FUNCTIONS : ON/OFF</p> <p>REGISTER MARK CONTROL:</p> <p>1=ADVANCE, 0=BRAKE CUTTING QRP1</p> <p>LOADING GRID CUTTING QRP2</p> <p>STOP: 0=DIE, 1=ADVANCE CUTTING STS1</p> <p>AIR CLAMP. FORMING DIE CUTTING STS2</p> <p>RED MEAT PROGRAM SYNC. 1</p> <p>BLOWING CHAIN SYNC. 2</p>			<p>REGULATORS</p> <p>MAIN AIR PRESSURE 90 PSI</p> <p>SEAL PRESSURE 25Y1 BAR</p> <p>THROTTLE VACUUM REGULATOR %</p>																																						
<p>FUNCTIONS 2: ON/OFF</p> <p>COOLING STATION 0</p> <p>HOLE PUNCH 0</p> <p>0=PUNCH TOP / 1=PUNCH BOTTOM 0</p> <p>AIR CLAMPING FORMING DIE TOP WEB 0</p> <p>0 - 0</p> <p>0 - 0</p>																																									
<p>COUNTER</p> <table border="1"> <thead> <tr> <th>NO.</th> <th>R/S</th> <th>ACTUAL</th> <th>SETTING</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>GREASE</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>1</td> <td>CHAIN LUBRICATION</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>2</td> <td>LUBRICATION RUN</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>3</td> <td>CYCLES RESETTABLE</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>4</td> <td>CYCLES TOTAL</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>5</td> <td>OPERATION TIME</td> <td>_____</td> <td>_____</td> </tr> </tbody> </table>			NO.	R/S	ACTUAL	SETTING	0	GREASE	_____	_____	1	CHAIN LUBRICATION	_____	_____	2	LUBRICATION RUN	_____	_____	3	CYCLES RESETTABLE	_____	_____	4	CYCLES TOTAL	_____	_____	5	OPERATION TIME	_____	_____	<p>COUNTER 2</p> <p>EDGE TRIM STOP SETTING</p> <p>_____</p>										
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5	OPERATION TIME	_____	_____																																						
<p>ADVANCE</p> <table border="1"> <thead> <tr> <th></th> <th>SETTING</th> <th>ACTUAL</th> </tr> </thead> <tbody> <tr> <td>ADVANCE</td> <td>_____ mm</td> <td>_____</td> </tr> <tr> <td>SPEED</td> <td>_____ %</td> <td>_____</td> </tr> <tr> <td>ACCELERATION</td> <td>_____ %</td> <td>_____</td> </tr> <tr> <td>DIE START</td> <td>_____ mm</td> <td>_____</td> </tr> <tr> <td>REGISTER MARK TOP</td> <td>_____ mm</td> <td>_____</td> </tr> <tr> <td>REGISTER MARK BOTTOM</td> <td>_____ mm</td> <td>_____</td> </tr> </tbody> </table>				SETTING	ACTUAL	ADVANCE	_____ mm	_____	SPEED	_____ %	_____	ACCELERATION	_____ %	_____	DIE START	_____ mm	_____	REGISTER MARK TOP	_____ mm	_____	REGISTER MARK BOTTOM	_____ mm	_____	<p>SYNCHRONIZATION</p> <table border="1"> <tbody> <tr> <td>_____ s</td> <td>SYNC 1 OUTPUT, PULSE WIDTH</td> <td>33</td> </tr> <tr> <td>_____ s</td> <td>SYNC 2 OUTPUT, PULSE WIDTH</td> <td>34</td> </tr> <tr> <td>_____ s</td> <td>SYNC 3 OUTPUT, DELAYED</td> <td>35</td> </tr> <tr> <td>_____ s</td> <td>WAIT FOR SYNC FEEDBACK</td> <td>32</td> </tr> <tr> <td colspan="3"> <p>WAIT FOR SYNC 2 WITH CLOSED DIE ?</p> <p>0/1 : NO/YES</p> </td> </tr> </tbody> </table>			_____ s	SYNC 1 OUTPUT, PULSE WIDTH	33	_____ s	SYNC 2 OUTPUT, PULSE WIDTH	34	_____ s	SYNC 3 OUTPUT, DELAYED	35	_____ s	WAIT FOR SYNC FEEDBACK	32	<p>WAIT FOR SYNC 2 WITH CLOSED DIE ?</p> <p>0/1 : NO/YES</p>		
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			<p>DIE LIFTING</p> <p>OPENING GAP FORMING DIE (1 - 8) _____</p> <p>OPENING GAP SEALING DIE (1 - 8) _____</p> <p>OPENING GAP TOP WEB (1 - 8) _____</p> <p>CUSHIONING . . . s</p> <p>DELAY CUSHIONING . . . s</p>																																						

NOTES: _____

FORMING DEPTH mm.

SEALING DEPTH mm

Multivac Program Log

[illegible]

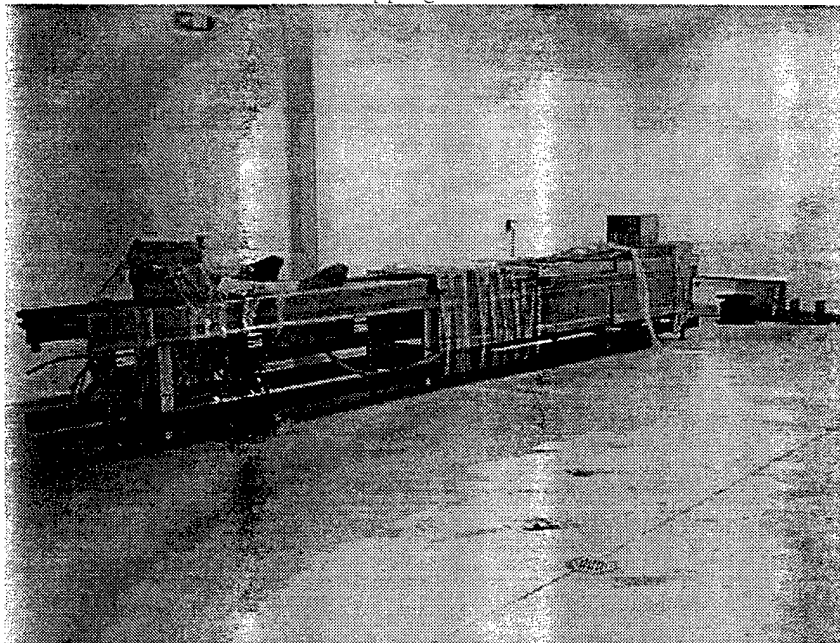
Multivac Record					
Multivac program number					
Cycle rate (cycle/min)					
Bottom web lot number					
Top web lot number					
Pouch volume (cc)					
Pouch depth (mm)					
Forming program number					
Forming time (sec)					
Forming fill time (sec)					
Advance speed					
Advance acceleration					
Sealing program number					
Vacuum (millibar)					
Vacuum chamber pre-vent (millibar)					
Gas flush (millibar)					
Sealing temperature ©					
Sealing time (sec)					
Sealing pressure (bar)					
Retort crate number					
Retort crate start fill time					

Date: 2/10/99
Supersedes: New

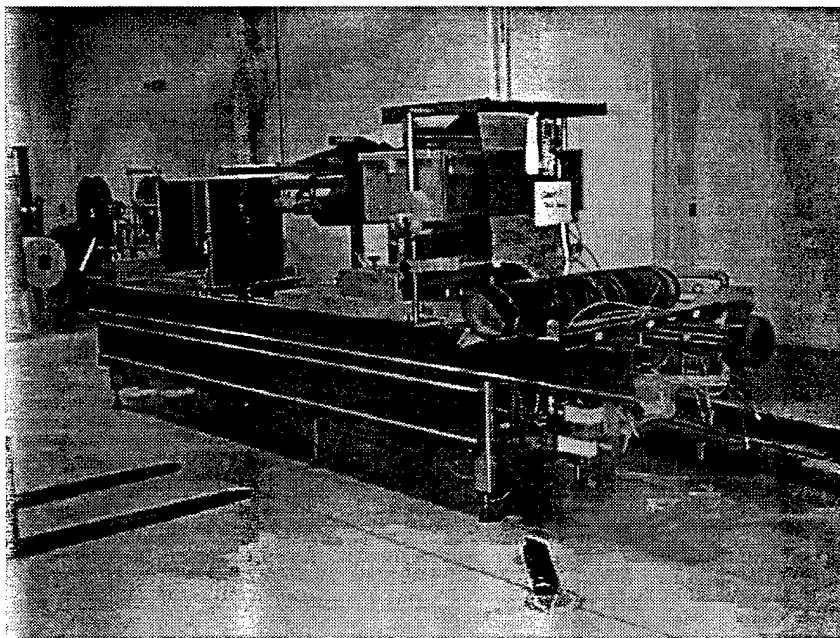
Approximate residual gas (cc)					
Number of pouches produced					
Number of pouches to QC					
Pouches to retort (include IT sample)					

Multivac Installation Photos

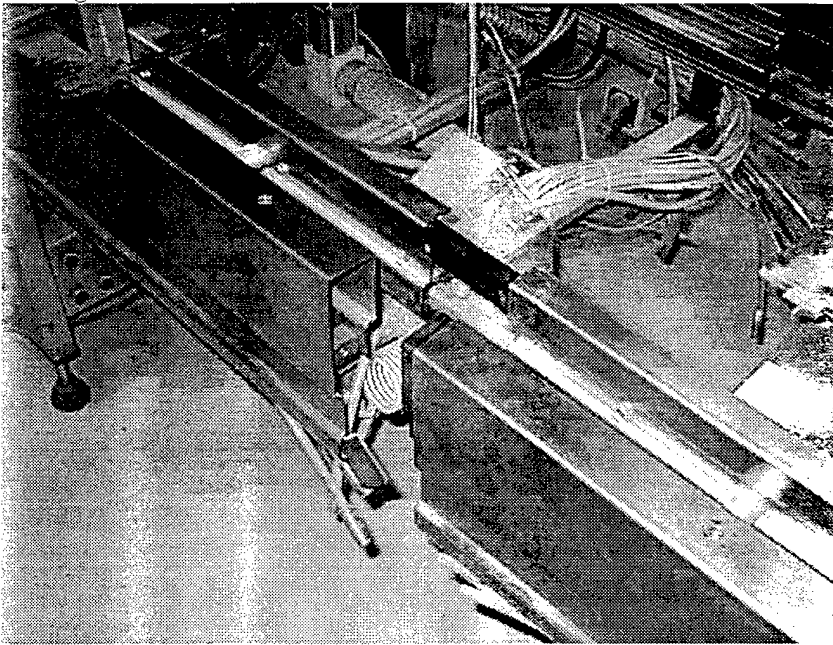
Form/Fill Section with steel shipping bars



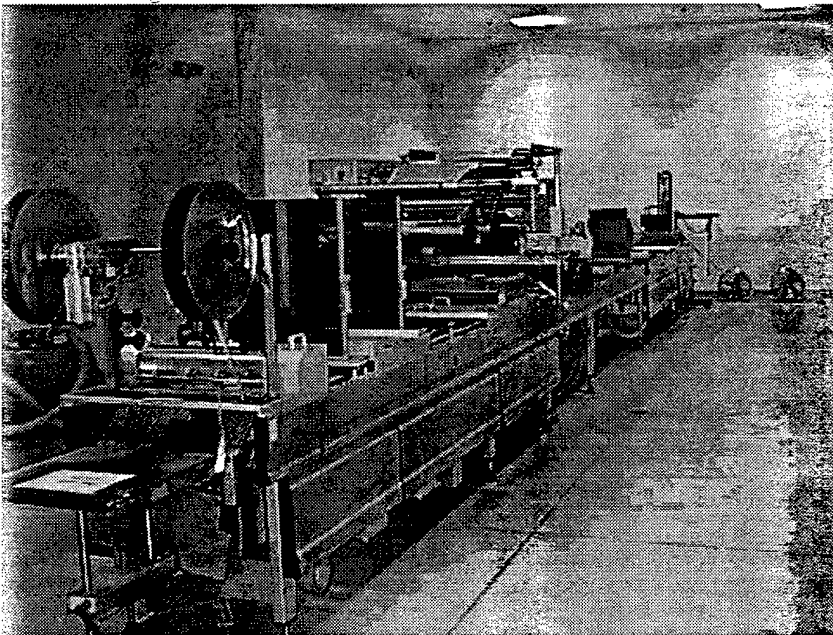
Sealing/Punch Section



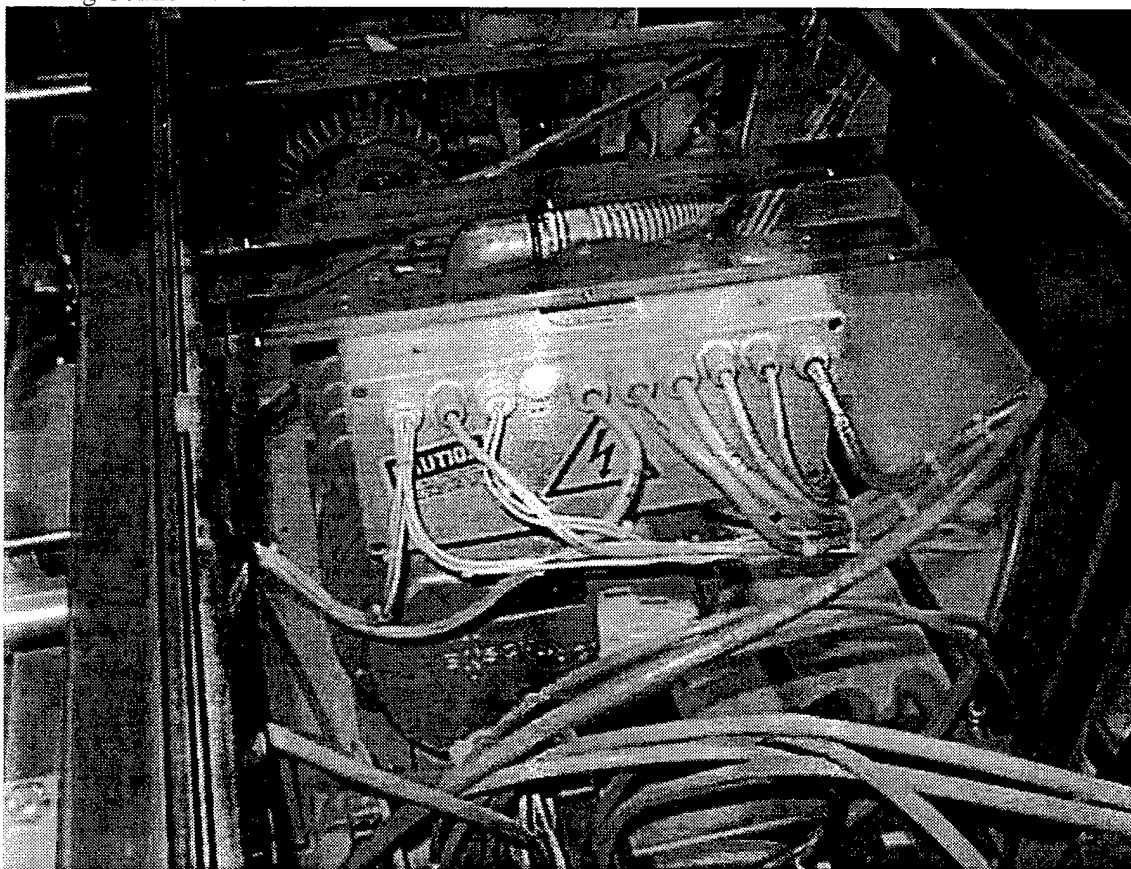
Joining Sections



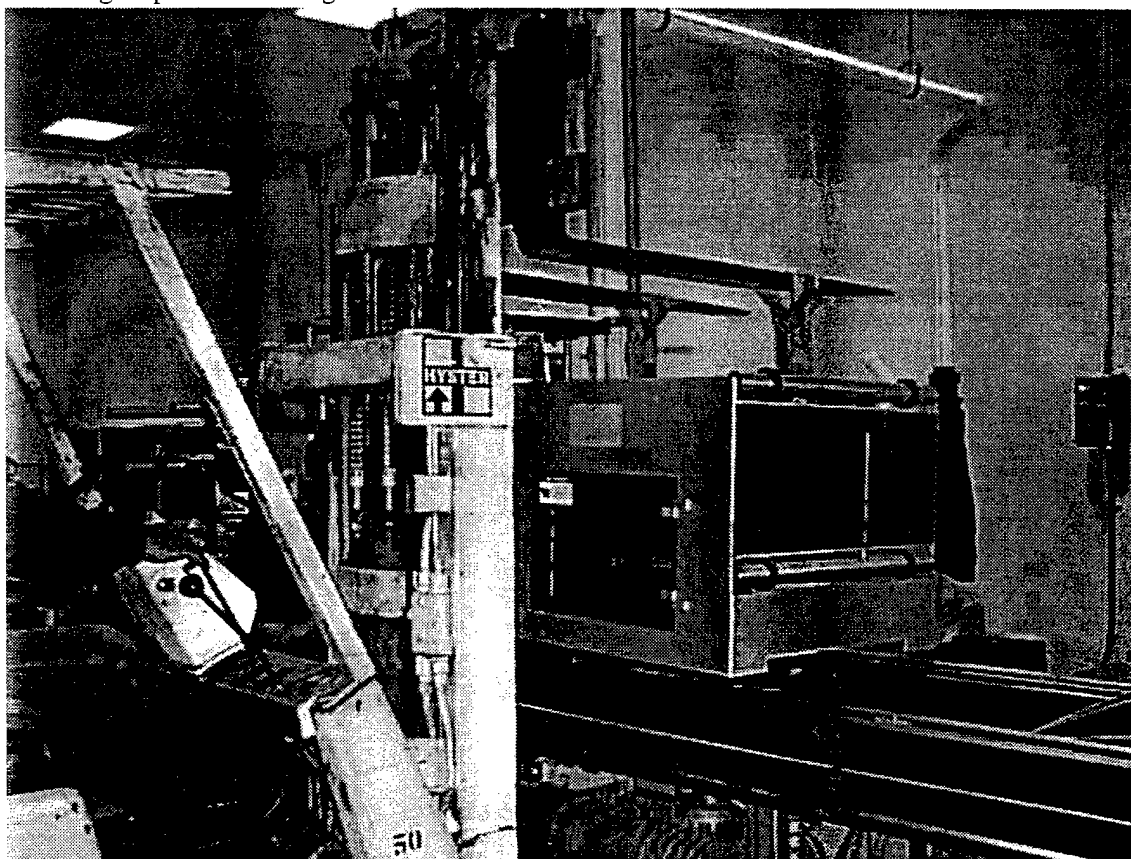
Machine Aligned and Leveled



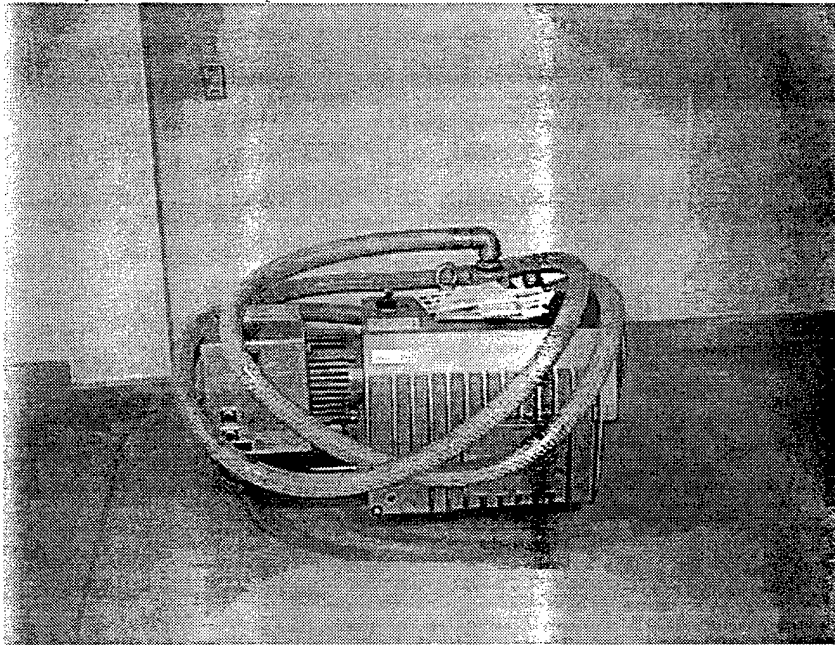
Making Connections



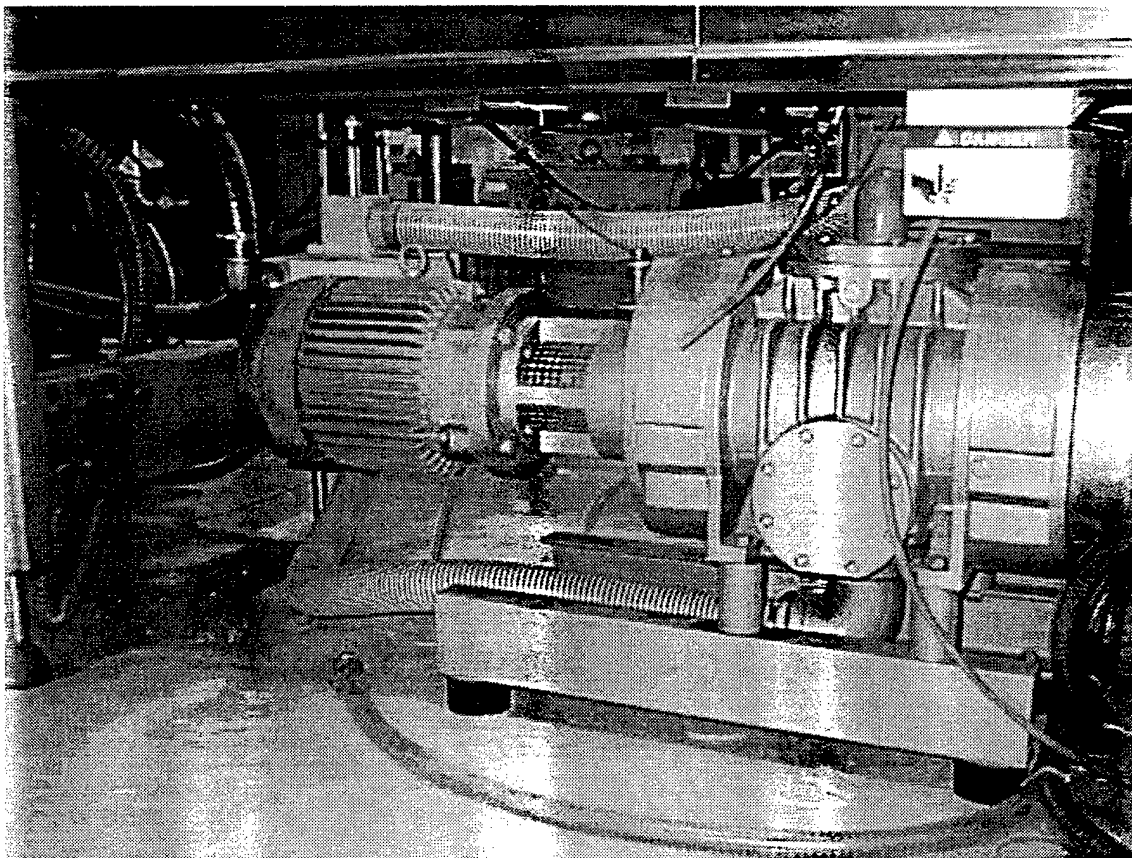
Installing Top Web Forming Station



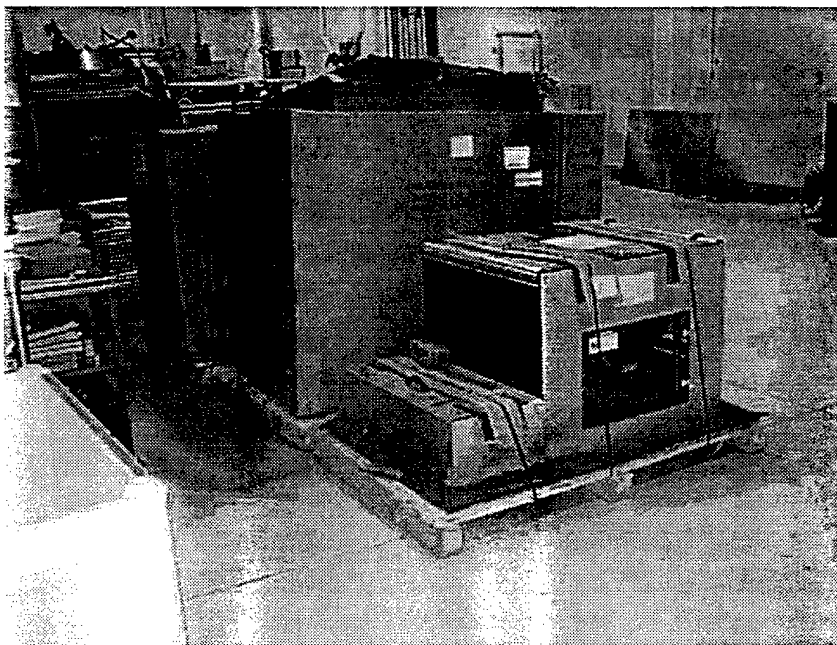
Primary Vacuum Pump



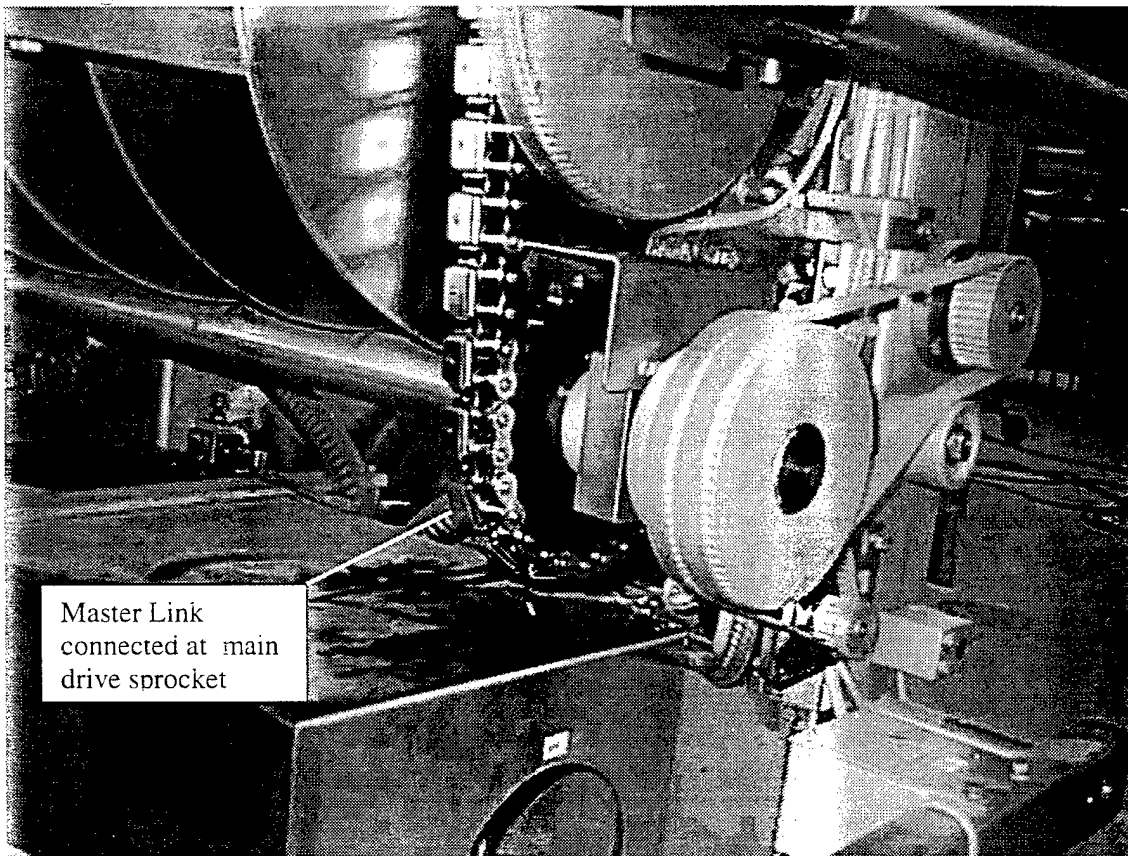
Roots Blower



Accessories on shipping pallets

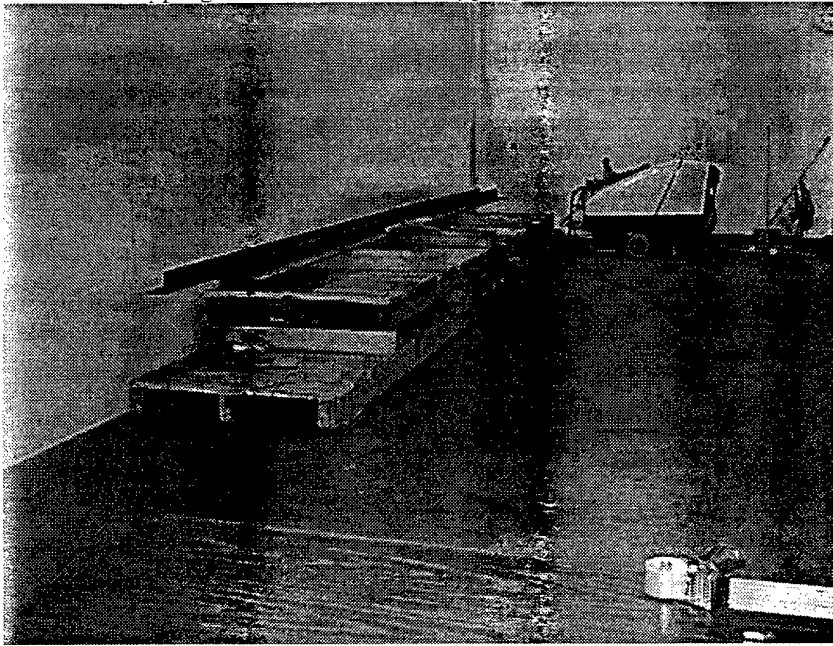


Installing Chains



Appendix 6.6

Wooden Shipping Pallets and Steel Shipping Bars



Appendix 6.7

Lawson-Marden Singen:
Flexalcon Technical Information
(Packaging Rollstock)

Terms for technical prerequisites and processing conditions for Flexalcon packing system on the Multivac R 530

1. Layout of the form tool

1.1. *Packing format (right-angled)*

Outer measurements
Inner measurements

1.2. *Form depth*

Maximum **25%** of the narrow package inner measurement (measured at the sealing edge inner rim) which corresponds to a maximum forming depth of ...

1.3. *Angle of the slope* (angle of the side surface) $\geq 45^\circ$

1.4. *Radii and transitions* (joining radii) : Minimum 20 mm radius

2. Forming conditions

Forming pressure	28 PSI - 43 PSI (2 - 3 bar)
Forming time	2 - 3 seconds

3. Evacuation

Remaining vacuum	\geq (50 mbar) 0,7 PSI
------------------	--------------------------

4. Sealing conditions

(Sealing) temperature	max. (230°C) = 450°F
Time	\leq 2 seconds
Pressure	(4.5 - 5 bar) 64 PSI - 70 PSI

5. Sterilizing conditions

Max. (125°C) 260°F / 30 - 60 minutes / max. 40 PSI(max. 2.8 bar)
in counterpressure steam autoclave

6. Colour tone change caused by sterilization

Discoloration and markings may occur on the package as a result of the sterilization process. These occurrences are normal and do not effect the performance of the package.

II Transport, storage and handling conditions

1. Transport

- Temperature (short-term) max. 105°F° (40°C)
- To be protected from frost
- Relative air humidity max. 90%

2. Storage

- Maximum one year at a temperature of 60 - 85°F (15 - 30°C)
- Relative air humidity 30 - 70%

Before processing the material store it for 48 hours in the climatic conditions of the production area.

3. Handling

Reels are delivered in vertical position. Upon turning the reels, care must be taken to protect the reel edges and web from damage and abrasions. The required equipment should be available.

III Filling conditions

1. Sealing zones

It is of utmost importance to ensure that the sealing zones are completely unsoiled during the filling process.

2. Position of the filling products

For solid and paste fillings It is important to place the products in the **center** of the mould of the bottom material.

3. Package impermeability

The impermeability of the package is checked through the bursting pressure test (Wornick method) (≥ 30 PSI)

The test is carried out on empty packages, which are to be taken from every web at the start of production, at every half an hour during the production and at each change of reel.

4. Filling product

Solid and paste products

No frozen products should be packed, as this might lead to cut-throughs.

IV Action when processing difficulties occur

When difficulties occur which can be attributed to the packing material, production with the reel(s) in question must be stopped immediately until the causes have been clarified definitely.

In this case the production should be continued with another reel.

LAWSON MARDON FLEXALCON PACKING SYSTEM Film/Foil Structures for U.S. – Military Applications –

Top material: 19my PET/12 my Al/75 my PP

Bottom material: 30 my OPP/45 my Al/15 my OPA/75 my PP

Lawson mardon Singen GmbH
01.07.1999

01.07.1999

Appendix 6.8

Multivac R530/#645 Machine Card and Tooling

M U L T I V A C Maschinenkarte extern	Kunde AMERIQUE/MRE PROJEC	Auftrags-Nr.: 440.48597
Vertretung: MU-INC.	Typ : R 530 MC	Stüli-Nr. : 04.404.8597.000.0
LKZ : 731 02 PKZ : 390	Masch-Nr. : 645✓	MEAG-Nr. : 1995-01529
	Baujahr : 95	Bestell-Nr. : 990116
	Spannung : 220V/60HZ	Bestell-Dat.: 17.05.95
	Beschriftung: ENGLISCH	Ausstell-Dat: 10.07.95 HAG RD
		Blatt : 1

Versandart: SEEFracht
Verpackung:

Änderungen: A 3.08.95 HA RD B 19.09.95 HA RD C 21.09.95 HA RD D 26.09.95 HA RD
E 6.10.95 HA RD F 5.12.95 HA RD

Ä	Pos	St	Beschreibung	Preislisten-Nr.
	001	1	R 530 basic machine 12375 mm frame length tot. MC92-Control	B. . . . B. 0.03.01
	002*		Frame lngth 10875mm WZA 7840...8640 mm KF 6525 mm	B. 1.02.10
	003		Cladding in knee-free area	B. 1.09.00
	004		Special web width 535 mm	B. 2.01.07
	005		2600 mm discharge - cross cut area 2050 mm - roller shear cut 160 -	B. 3.02.04
	006		Pneumatic control cabinet - infeed end -	B. 4.04.00
	007		Safety standards System D with magnetic switches - MSG single built-in / with photoelectric beam -	B. 5.03.00
	008		Cover guard SF for tunnel at machine discharge - with finger curtain -	B. 5.03.03
	009		Safety guards -----	A. 5.03.09
	010		Die lift.system A: stroke 170 mm / sgl.lift FWZ ----- 4-post lift.mechanism / post centers 550 mm Lifting mechanism for Forming - System A - ----- 4-post lift.mechanism / post centers 550 mm 170 mm maximum stroke / UT lower part real mm Lifting rail position mm	B. 6.01.00 B. 6.01.01
D	011	1	Add.lifting mechanism for Forming - System A - ----- 4-post lift.mechanism / post centers 550 mm 170 mm maximum stroke / UT lower part real mm Lifting rail position mm	B. 6.05.01

Ä	Pos	St	Beschreibung	Preislisten-Nr.
D			stroke reduced: 70 mm / 4-post	B. 6.05.07
D			lange Führungssäulen	
D			durchgehender Sonderanschlußbock zur Montage des	
D			Hubwerks mit obenliegendem Kniehebel auf Maschi-	
D			nenbett zur Verformung nach oben	
D			Anschlüsse über Schläuche (Kühlwasser, Formvakuum,	
D			Formluft, Luft zum Heizen)	
D			separater Schließdruck in Anschlußbock integriert	
012			Die lift.system B: stroke 220 mm / sgl.lift SWZ	B. 6.02.10
			Lifting mechanism for Sealing - System B -	B. 6.02.14

			4-post lift.mechanism / post ctrs. 550 mm	
			60 mm OT upper part / OT upper part real	mm
			220 mm maximum stroke/ UT lower part real	mm
			Lifting rail position	mm
013			MC92-Drive	B. 7.04.00
014			Pneumatic equipment for machine	A.19.00.00

			Evacuation unit UV 4 for liquid products	B. 8.08.10
			- corrosion resistant / for aggressive products	
			- narrow or wide top web	
			- remote throttle adjustment	
			- glass bulb separator with controlled drain valve	
			to pack cold products	
			additional vacuum valve	B. 8.08.11
			for later use	
			Forming System C (Plug-assist Die)	B.10.03.00

			Heating and forming by compressed air and vacuum	B.10.03.02
			also for standard forming	
B 015			1 Equipment for sep. closing pressure - System R 530	B.10.09.01
B			for 4-post lifting mechanism	
B			for FWZ	
B			1 x for top web forming	
			Pneumatic accessories	Y.19.00.00

016			1 further comp.air lubricator/regulator	A.19.09.01
			- incl. magnetic valve -	
			bei FWZ	

St	Ä	Pos	St	Beschreibung	Preislisten-Nr.
1				Vacuum main valve UV 4/1.1 water-proof	Y.19.24.12
1				- for narrow/wide top web -	
1				add. valve for separate product vacuum	A.19.24.01
7				1 add. Wabco-Valve /	Y.19.29.20
				1 Wabco 5/2-Ventil für Hubmechanik Einlegeschaablone	A.19.08.02
		017		1 Vacuum pump RA 0100(-131) capacity 100 m3/h	X.11.02.00
				- built-in 3x220/380-415V/50-60Hz 3,00 kW	
				for forming and top web forming	
1				018 1 Mounting kit A) for vacuum pump: 100-131	B.29.10.01
				019 1 Mounting kit C) for Roots pumps: WV1000	B.29.10.03
1				siehe beil. Pumpenzeichnung	
1				Rootspumpe wird von MU-INC. besorgt	
				020 Noise muffler and common air discharge from	A.12.01.00
				compressed air operated units	
3				mit Anschluß zum Herausführen der Abluft aus	
				Verpackungsraum	
				021 3 Central lubrication system for die lift.sys. R 530	B.12.03.08
				022 Stainless steel gripper chain covers	B.12.02.01
				023 Gripper chain lubricator with cleaning unit	B.12.03.05
				- cycled action at preselected intervals	
1				incl.program for lubrication cycle	
	B			1 Additional guide roller for top web	B.14.04.01
1	B			for inkjet with traversing unit	014
	A	024		1 Tandem film unwind FA03 top web 535 mm	B.14.02.04
	A			- mech. web-feed - 76 mm / 3 inches -	
	A			max. Rollengewicht 80 kg	
	A			inkl. 6"-Adapter	
	A	025		1 Tandem film unwind FA02 bottom web 535 mm	B.14.06.04
	A			- mech. web-feed - 76 mm / 3 inches	
	A			max. Rollengewicht 80 kg	
1	A			inkl. 6"-Adapter	
				026 E l e c t r i c s a n d E l e c t r o n i c s	
				- - - - -	
				3-phase AC 220 V without neutral wire 60 Hz	Y.15.01.01
				027 1 Photoelectric registration for top web	B.16.01.00
				only to be used with non-formed top web	
				028 1 MC92-Terminal with fluorescent screen	A.17.20.02
				42 character, 8 line display	
	B			on separate post on machine frame	

A	Pos	St	Beschreibung	Preislisten-Nr.
	029	1	MC92 temp.control module for max.6 control loops	A.17.21.00
	030	1	add. temp. control module for 6 control loops	B.17.22.01
	031	1	Sensor for monitoring cooling water temperature	B.17.22.05
	032	7	Hardware per controlled heating circuit	B.17.23.00
			1 x heating	
			1 x heating top web forming	
			1 x sealing	
			4 x temperature control sealing plate	
	033	1	Analog pressure transducer monitor sealing pressure	B.17.29.01
	034	1	Pressure transducer for display and control of vacuum and/or gas flushing	B. 8.10.07
	035	1	RS 232 Interface with Slave	B.17.31.01
			MC92 storage module f.memorizing machine settings	A.17.20.06
			- up to 32 different batches -	
	036		Reinigungsprogramm für Maschine R 530	B.18.79.03
		3	Add.on-off/selector function per VFT zum Schalten von 1 auf 2 STS oder von 1 auf 2 QRP (zur späteren Verwendung) zum separaten Abschalten des STS-Oberhubs, damit die STS in ausgeschaltetem Zustand entweder ange- hoben oder abgesenkt stehen bleiben kann	B.18.30.03
		1	Key switch for MC-92-terminal - authorization for parameter access	A.18.30.05
	037	1	Protrusion detector KV1 for product above web line	B.18.14.00
			Durchlaßhöhe 30 mm beachten Bei Packungen mit OFO-Verformung wird Schaltblech in "Oben-Stellung" arretiert	
	038		Control cabinet heater	B.18.16.00
	039		Synchronisation for infeed	B.18.51.00
			Anodizing of die - die tops and bottoms	A.22.26.00
B	040	1	D i e s e t / die no. 33868- 300 /	A.21.11.00
B			-----	
B			- for sealing carriage (w/o carriage) -	
B			designed for aluminum forming	
		535 mm bottom web	535 mm top web	A.21.12.00
		1 tracks	1 rows	
B		420 mm C/O length	105,5 mm die depth	
B		185 mm die height FDA	185 mm die height SDA	
		12 mm step height FDA	12 mm step height SDA	
		external package size PM 496	x 416,5 mm	A.21.12.01

A	Pos	St	Beschreibung	Preislisten-Nr.	
			internal pocket size FM 481 x 398,5 mm	A.21.12.02	
			edge evacuation and gas flushing	A.21.35.04	
			rod heaters	A.21.39.02	
			FDA-UP built to take grid, w/o grid	A.22.26.06	
			Compressed air + vacuum forming with plug-assist	A.22.10.04	
			- direct-acting cylinders -		
			ZT 70 mm		
			non-heated plugs - semi-rigid film -	X.22.10.04	
			Chrome handles -	A.22.22.02	
			FDA-LP without radius plates	A.22.36.03	
			FDA-LP without filler plates	A.22.36.05	
			FDA-LP to take forming plates	A.22.36.07	
			w/o forming plate for basic die		
			SDA - with evacuation -	A.24.00.06	
B			SDA-UP built to take sealing carriage	A.24.24.02	
B			- w/o sealing carriage for basic die -		
			Chrome handles -	A.24.22.02	
B			high blocks - SDA-LP -	A.24.35.14	
			SDA-LP without radius plates	A.24.36.02	
			SDA-LP without filler plates	A.24.36.05	
			SWZ-UT built to take sealing grid	A.24.36.07	
			- without grid -		
B			New design forming plate FDA 01)		024
C	080		1 Forming plate - type 1 / F D A - L P	X.23.33.01	
C			1 tracks 1 rows / No.		
C			01) for basic die 33868- 300		
C			FM 481 x 398,5 x 100 / FM 496 x 416,5 mm		
C			Execution: 100 mm deep, for flexible film		
B			carriage - anodized -	X.25.08.11	025
B	041		1 Seal plate carriage SDA-UP / Die No. 33869- 300 /	X.25.01.14	
B			-----		
B			- incl.spare sealing plate -		
B			14) to suit Vario 1/ No. R530-33868/1		
			535 mm bottom web 535 mm top web		
			4 tracks 2 rows		
			420 mm C/O length 12 mm step height SDA		
			PM 121 x 206,5 mm FM 106 x 188,5 mm		
			SDA-UP heaters: cal rod heaters	X.25.10.10	
			Aufreißschlitz		
			SWZ-OT verstärkt zur Aufnahme von dicken		
			Siegelplatten - erforderlich ab Produktüber-		
			stand >10 mm		
			Kühlplatten auf Buchsen		
			glatt, zur Herstellung von Vakuumpackungen		

A	Pos	St	Beschreibung	Preislisten-Nr.
			ohne OF-Verformung	
B			1 zus. Satz Platten R314	
B			ausgenommen für OF-Verformung 12 mm	
B			inkl. Distanzbuchsen und Schrauben für	
B			Vakuumpackungen	
			Perimeter seal 5.5 mm nom. seal seam	X.25.03.10
			Produktüberstand >10 mm	
			Randabsaugung und Begasung	
			Siegelplatte 1teilig	
			eloxiert und teflonisiert	
			4 zus. Temperaturfühler in den Ecken zur	
			Temperaturüberwachung	
			Siegelung bis zur Schneidung reichend	
042	1		Sealing grid with filler plates / S W Z - U T	X.25.32.13
			4 tracks 2 rows / No. R530-33868/1	
			13) for basic die 33868- 300 / Vario 1	
043	1		Forming plate - type 3 / F D A - L P	X.23.33.13
			4 tracks 2 rows / No. R530-33868/1	
			13) for subdivision 1 / No. R530-33868/1	
			FM 106 x 188,5 x 100 / PM 121 x 206,5 mm	
B			Execution: for aluminium	
			max. ZT 100 mm	
			with filler plates	
044	1		plug mounting plate - non-heated plugs -	X.23.21.11
			4 tracks 2 rows / no. R530-33868/1	
			11) for subdivision 1 / no. R530-33868/1	
			for aluminum forming	
045	1		Grid for FDA-UP - removable -	X.23.27.11
			4 tracks 2 rows / No. R530-33868/1	
			11) for subdivision 1 / No. R530-33868/1	
			aus Stahl	
046	8		Special insert type 3 / F D A - L P	
			4 tracks 2 rows / No. R530-33868/2	
			FM 106 x 188,5 x 23,5 / PM 121 x 206,5 mm	
			13a) to suit basic die 33868- 300 / Vario 1	
			Ausführung: passend in Formplatte R530-33868/1	
			45 Grad Schräge	
			für Alu-Folien	
B			auch verwendbar als Begrenzungsplatte	
B			für flexible Folie	
C-081	1		Divider with set of plates R 20 / F D A - L P	X.23.31.21
C			4 tracks 2 rows / No. R530-33868/4 (neu)	
C			FM 106 x 188,5 mm / PM 121 x 206,5 mm	
C			21) for basic die 33868- 300 / Vario 2	

A	Pos	St	Beschreibung	Preislisten-Nr.
C			passend in Formplatte R530-33868/3	
	047	1	TWF-Station compl. - anodized - Top web forming station / no. 33868- 302	A.26.23.05 X.26.20.00
			----- 535 mm top web 420 mm C/O length 1 tracks 1 rows FM 481 x 398,5 mm PM 496 x 416,5 mm	X.26.20.01
			TW-single heating zur Verwendung mit flexibler Folie	A.26.20.01
			TW-forming without plug-assist compressed air forming + vacuum	A.26.22.00 A.26.21.02
	048	1	Forming plate - type 3 / Top web forming station 4 tracks 2 rows / No. R530-33868/1 13) for subdivision 1 / No. R530-33868/1 FM 106 x 188,5 mm / PM 121 x 206,5 mm	X.26.25.13
			Ausführung: Fixe Tiefe 12 mm für Alu- und flexible Folie mit 4 mm PVC-Rundschnur	
	049	1	Guide roller for top web with 5 discs 11) for subdivision 1 / no. R530-33868/1	X.26.28.11
	050	1	seal seam cooling unit - for cooling cutting zones	A.26.72.03
A			OT integrated in SWZ-OT	
A			UT only 2 cross rails on lifting rail	
A			on separate lifting mechanism with top lift 60 mm	
	051	1	Hole punch for U-shaped slits - mounted after FWZ on lifting rails -	B.68.25.02
	052	1	Support system BL 94 to suit die No 33868- 300	B.68.63.01
	053	1	Discharge tray BL 94 to suit die No. 33868- 300	B.68.63.03
B	054	1	Die guard "DX" to suit die No. 33868- 300 guard pos. 1: FDA-infeed to suit die No. 33868- 300 / guard pos. 2: FDA-discharge 300 SF + LS to suit die No. 33868- 300 / guard pos. 3: SDA-infeed bis OF-Formstation to suit die No. 33868- 300 / Die guard pos. 4: SDA-discharge Guard position 5: R 530	B.27.10.90 A.27.21.01 A.27.22.01 A.27.23.09 B.27.24.01 B.27.25.01
	055	4	Stainless steel loading grid with lift to suit subdivision 1 / no. R530-33868/1 über je 3 Takte reichend Innenmaße ringsum 7,5 mm kleiner als FM Eintauchtiefe ca. 5 mm	X.12.04.13

A	Pos	St	Beschreibung	Preislisten-Nr.
	056	4	lifting mechanism for loading grid stroke 50 mm for max. product protrusion 30 mm	X.12.04.05
			cycles per minute 15 cycles/min. product:	A.21.12.05 A.21.12.04
			Fertigmenüs momentan kalt abgefüllt z.B. Kartoffelgratin, Gemüse mit Soße, Reis mit Fleisch, etc. alle Produkte in Alu-Verbundfolie verpackt unter Vakuum, anschließend sterilisiert	
			specification - bottom web: 25-35 my PP / 38-45my Alu / 75-100 my PP	A.21.12.07
			specification - top web: momentan ungeformt 12 my PET/9-8my Alu/75-100 my PP	A.21.12.06
	057	1	Forming die upper part / die no. 33868- 301 / -----	A.22.20.00
			535 mm bottom web 535 mm top web 1 tracks 1 rows	X.22.20.00
			420 mm C/O length 12 mm step height FDA PM 496 x 416,5 mm FM 481 x 398,5 mm	
			single heating - above - rod heaters	A.22.01.01 A.21.39.02
			Compressed air forming w/o plug-assist - flexible film - Comp.air + vacuum forming without plug-assist - flexible film - Heating plate FWZ-OT - over 1 track heating -	A.22.10.00 Y.22.10.00 A.22.10.00 Y.22.10.00 A.22.27.03
			FDA-UP heaters: cal rod heaters	A.23.10.00
			new design SDA-LP	X.25.02.19
	058	2	Matched male/female punch STS92 basic unit ww 535 Special execution with pneum. direct drive for cutting lift and separate pneum. drive for top lift	A.42.10.06
			top lifter for matched m/f punch for punch out a 3,5 mm strip in cross direction	A.42.10.09 A.42.10.09
	059	2	Cutting tool for m./f. punch STS92 / w.w. 535 mm to suit R530-33868/1 / Vario 1	X.42.11.16

A	Pos	St	Beschreibung	Preislisten-Nr.	
			with integrated punch of tear slit		
	060		1 Roller shear cutting - basic unit -	X.47.40.00	
	061		1 Roller shear cutting shaft set ZT 160	X.47.41.14	
			4 tracks - to suit R530-33868/1 / Vario 1		
			for use with Die No. 33869- 300		
	062		2 Sets of blades for edge trim ZT 160	X.47.42.14	
	063		3 Set of blades for 4 mm strip cut ZT 160	X.47.44.14	
			- PM 121 mm -		
	064		1 Film edge trim rewind RSW.E3 with swing arm	B.48.02.01	
			mit Randstreifenabrißkontrolle mit Näherungs-		
			schalter		
			Maschinenstop bei Streifenabriß		
	065		1 Trim removal unit for edge and middle strip trim	A.48.04.00	
F	084		1 Punch cover for vacuum removal of punch waste	B.48.11.01	
F			nur für Aufreißkerben		
F			Industriestaubsauger wird vom Kunden besorgt		
	066		Plexiglas drum D 150 / middle trim strip removal	B.48.05.00	
B			for product height 30 mm		
	067		1 plexiglas drum	A.48.05.01	
E	068		1 X/Y-linear co-ordinator unit incl. control unit	A.53.02.02	052
E			for moving 2 inkjet heads cross the machine		
E			- mounted in Multiprint area		
E			to suit die No. 33868- 300 /		
E			incl.safety cover, magnetic switches		
E			for Excel 270, to be delivered by MU-INC.		
	069		1 Vibration unit with electrical vibrator	B.52.01.02	
			- height adjustable -		
			covering 2 cycles		
			position: under 1st + 2nd cycle of the 4th		
			loading grid		
	070		1 Discharge conveyor synchr. 800 mm w.neoprene belt	B.55.08.00	
			- attached conveyor -	A.55.19.02	
	071		1 Fork lift to ease die changes	B.64.21.00	
			mit Aufnahmeplatte aus Kunststoff		
			zum einfachen Wechseln der OF-Formstation		
	072		spare rod heaters	X.95.10.14	
			for sealing plate die no. 33869- 300		
	073*		spare rod heaters	A.95.10.06	
			for top web forming station die no.		
			Nr. 33868-302		

Ä	Fos	St	Beschreibung	Preislisten-Nr.
	074*	1	add.sealing gaskets R530-33868/1 / Vario 1 Bitte ET-Auftrag Nr. 240.5.16995 beachten	X.95.16.10
	075*		Extras 1 : 1 cover plate for top web forming station, with MGS	A.95.18.01
B	082*		Extras 2 : 1 zus. Satz Platten	A.95.18.02
B			R314 passend in Siegeleinschub 33869-300	
B			ausgenommen für OF-Verformung 12 mm	
B			inkl. Distanzbuchsen und Schrauben für Vakuum	
B			packungen	
B	083*		Extras 3 : 1 Hubmechanik	A.95.18.03
B			für Kühlvorrichtung mit Oberhub 60 mm	
	076		spare rod heaters for heating plate die no. 33868- 301	A.95.10.01
	077	3	Operator manuals	A.28.91.08
	078		CE-Schild	M.95.90.08
	079		CE-Konformitätserklärung	M.95.90.08

Additional Equipment Provided by Domestic Vendors

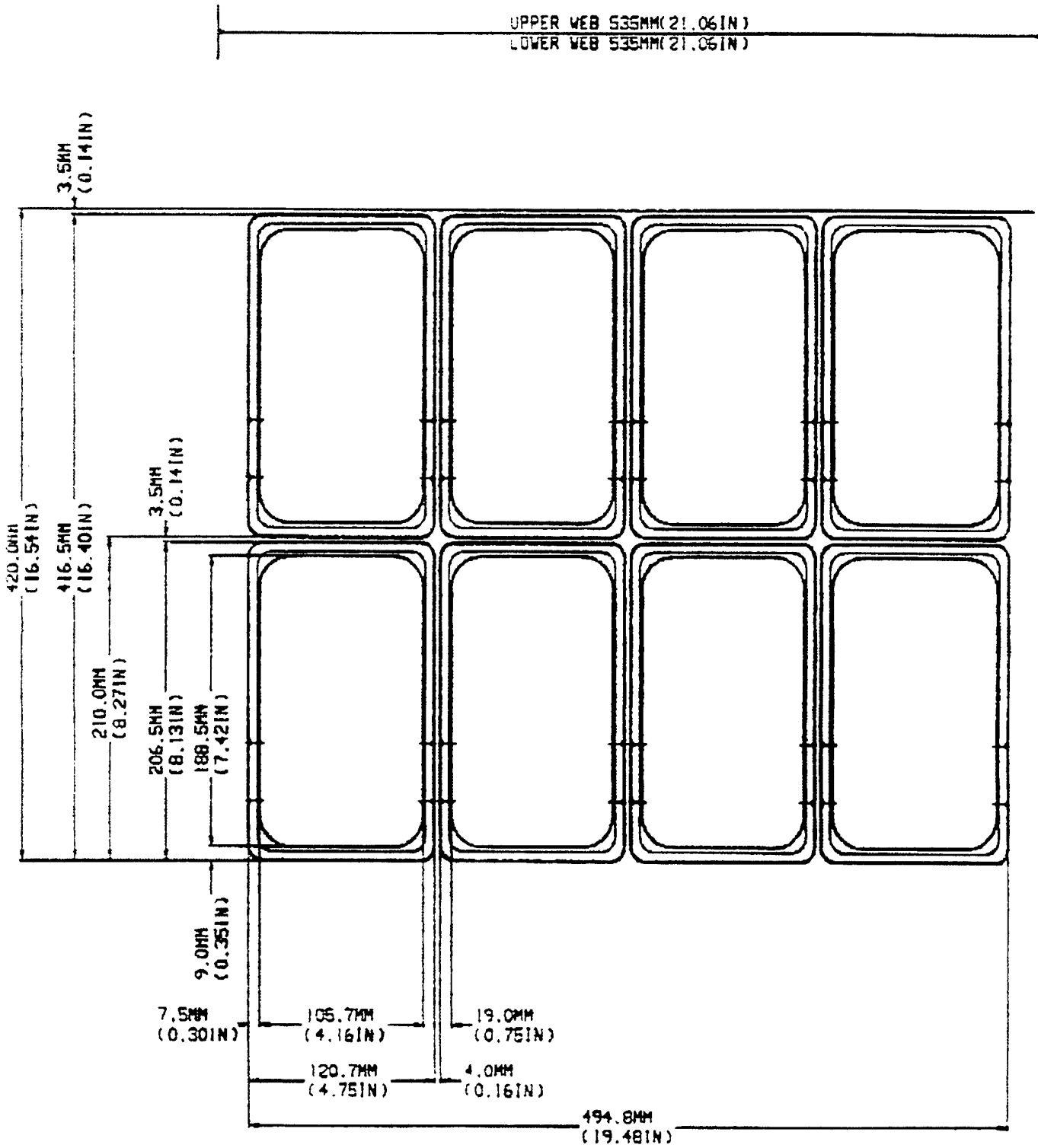
- 1 ea. VideoJet Excel Series 273se 2 Head Ink Jet Printer
 - * traversing system part of R530
 - Spare Parts Kit
 - Compressed Air Filter System
 - Alert Light
 - Console Stand

~~1 ea. Ames Engineering Web Lift Model AWL8C "Backsaver II"~~

- 1 ea. Busch Inc. Model RA0400 Vacuum Pump for seal die evacuation

- 1 ea. Busch Inc. Model WV1000 Roots Blower to assist RA0400
 - Blower internally mounted in R530 at installation

1 ea. 2000 Series 2000 Series 2000 Series 2000 Series 2000 Series



Appendix 6.9

Multivac R530/#667 Machine Card and Tooling

M U L T I V A C Maschinenkarte extern	Kunde LAND O'FROST/MRE PRO	Auftrags-Nr.: 440.48601
Vertretung: MU-INC.	Typ : R 530 MC	Stül-Nr. : 04.404.8601.000.0
LKZ : 731 02	Masch-Nr. : 667	MEAG-Nr. : 1995-01528
PKZ : 390	Baujahr : 95	Bestell-Nr. : 990115
	Spannung : 220V/60HZ	Bestell-Dat.: 17.05.95
	Beschriftung: ENGLISCH	Ausstell-Dat.: 10.07.95 HAG RD
		Blatt : 1
Versandart: SEEFRACHT Verpackung:		
Änderungen: A 28.07.95 HA RD B 6.09.95 HA WM C 15.09.95 HA RD D 26.09.95 HA RD E 6.10.95 HA RD F 23.10.95 HA RD G 6.12.95 HA RD		

Ä	Pos	St	Beschreibung	Preislisten-Nr.
	001	1	R 530 basic machine 12375 mm frame length tot. MC92-Control	B. . . . B. 0.03.01
	002*		Frame lngth 10875mm WZA 7840...8640 mm KF 6525 mm	B. 1.02.10
	003		Cladding in knee-free area	B. 1.09.00
	004		Special web width 585 mm	B. 2.01.07
	005		2600 mm discharge - cross cut area 2050 mm - roller shear cut 160 -	B. 3.02.04
	006		Pneumatic control cabinet - infeed end -	B. 4.04.00
	007		Safety standards System D with magnetic switches - MSG single built-in / with photoelectric beam -	B. 5.03.00
	008		Cover guard SF for tunnel at machine discharge - with finger curtain -	B. 5.03.03
	009		Safety guards -----	A. 5.03.09
	010		Die lift.system A: stroke 170 mm / sgl.lift FWZ ----- 4-post lift.mechanism / post centers 550 mm Lifting mechanism for Forming - System A - ----- 4-post lift.mechanism / post centers 550 mm 170 mm maximum stroke / UT lower part real mm Lifting rail position mm	B. 6.01.00 B. 6.01.01
D	011	1	Add.lifting mechanism for Forming - System A - ----- 4-post lift.mechanism / post centers 550 mm 170 mm maximum stroke / UT lower part real mm Lifting rail position mm	B. 6.05.01

Ä	Pos	St	Beschreibung	Preislisten-Nr.
D			stroke reduced: 70 mm / 4-post	B. 6.05.07
D			lange Führungssäulen	
D			durchgehender Sonderanschlußbock zur Montage des	
D			Hubwerks mit obenliegendem Kniehebel auf	
D			Maschinenbett zur Verformung nach oben	
D			Anschlüsse über Schläuche (Kühlwasser, Formvakuum,	
D			Formluft, Luft zum Heizen)	
D			separater Schließdruck in Anschlußbock integriert	
012			Die lift.system B: stroke 220 mm / sgl.lift SWZ	B. 6.02.10
			Lifting mechanism for Sealing - System B -	B. 6.02.14

			4-post lift.mechanism / post ctrs. 550 mm	
			60 mm OT upper part / OT upper part real	mm
			220 mm maximum stroke/ UT lower part real	mm
			Lifting rail position	mm
013			MC92-Drive	B. 7.04.00
014			Pneumatic equipment for machine	A.19.00.00
			- - - - -	
			Evacuation unit UV 4 for liquid products	B. 8.08.10
			- corrosion resistant / for aggressive products	
			- narrow or wide top web	
			- remote throttle adjustment	
			- glass bulb separator with controlled drain valve	
			to pack cold products	
			additional vacuum valve	B. 8.08.11
			for later use	
			Forming System C (Plug-assist Die)	B.10.03.00

			Heating and forming by compressed air and vacuum	B.10.03.02
			also for standard forming	
C 015			1 Equipment for sep. closing pressure - System R 530	B.10.09.01
C			for 4-post lifting mechanism	
C			for FWZ	
C			1 x for top web forming	
			Pneumatic accessories	Y.19.00.00

016			1 further comp.air lubricator/regulator	A.19.09.01
			- incl. magnetic valve -	
			bei FWZ	

A	Pos	St	Beschreibung	Preislisten-Nr.	
			Vacuum main valve UV 4/1.1 water-proof	Y.19.24.12	
			- for narrow/wide top web -		
			add. valve for separate product vacuum	A.19.24.01	
			1 add. Wabco-Valve /	Y.19.29.20	
			1 Wabco 5/2-Ventil für Hubmechanik Einlegeschaablone	A.19.08.02	
017	1		Vacuum pump RA 0100(-131) capacity 100 m3/h	X.11.02.00	
			- built-in 3x220/380-415V/50-60Hz 3,00 kW		
			for forming and top web forming		
018	1		Mounting kit A) for vacuum pump: 100-131	B.29.10.01	
019	1		Mounting kit C) for Roots pumps: WV1000	B.29.10.03	
			siehe beil. Pumpenzeichnung		
			Rootspumpe wird von MU-INC. besorgt		
020			Noise muffler and common air discharge from	A.12.01.00	
			compressed air operated units		
			mit Anschluß zum Herausführen der Abluft aus		
			Verpackungsraum		
021	3		Central lubrication system for die lift.sys. R 530	B.12.03.08	
022			Stainless steel gripper chain covers	B.12.02.01	
023			Gripper chain lubricator with cleaning unit	B.12.03.05	
			- cycled action at preselected intervals		
			incl.program for lubrication cycle		
C	1		Additional guide roller for top web	B.14.04.01	014
C			for ink jet with traversing unit		
A 024	1		Tandem film unwind FA03 top web 585 mm	B.14.02.04	
A			- mech. web-feed - 76 mm / 3 inches -		
A			max. Rollengewicht 80 kg		
A			inkl. 6"-Adapter		
A 025	1		Tandem film unwind FA02 bottom web 585 mm	B.14.06.04	
A			- mech. web-feed - 76 mm / 3 inches		
A			max. Rollengewicht 80 kg		
A			inkl. 6"-Adapter		
026			E l e c t r i c s a n d E l e c t r o n i c s		
			- - - - -		
			3-phase AC 220 V without neutral wire 60 Hz	Y.15.01.01	
027	1		Photoelectric registration for top web	B.16.01.00	
			only to be used with non-formed top web		
028	1		MC92-Terminal with fluorescent screen	A.17.20.02	
			42 character, 8 line display		
C			on separate post on machine frame		

Ä	Pos	St	Beschreibung	Preislisten-Nr.
	029	1	MC92 temp.control module for max.6 control loops	A.17.21.00
	030	1	add. temp. control module for 6 control loops	B.17.22.01
	031	1	Sensor for monitoring cooling water temperature	B.17.22.05
	032	7	Hardware per controlled heating circuit	B.17.23.00
			1 x heating	
			1 x heating top web forming	
			1 x sealing	
			4 x temperature control sealing plate	
	033	1	Analog pressure transducer monitor sealing pressure	B.17.29.01
	034	1	Pressure transducer for display and control of vacuum and/or gas flushing	B. 8.10.07
	035	1	RS 232 Interface with Slave	B.17.31.01
			MC92 storage module f.memorizing machine settings	A.17.20.06
			- up to 32 different batches -	
	036		Reinigungsprogramm für Maschine R 530	B.18.79.03
		3	Add.on-off/selector function per VFT zum Schalten von 1 auf 2 STS oder von 1 auf 2 QRP (zur späteren Verwendung) zum separaten Abschalten des STS-Oberhubs, damit die STS in ausgeschaltetem Zustand entweder ange- hoben oder abgesenkt stehen bleiben kann	B.18.30.03
		1	Key switch for MC-92-terminal - authorization for parameter access	A.18.30.05
	037	1	Protrusion detector KV1 for product above web line	B.18.14.00
			Durchlaßhöhe 30 mm beachten Bei Packungen mit OFO-Verformung wird Schaltblech in "Oben-Stellung" arretiert	
	038		Control cabinet heater	B.18.16.00
	039		Synchronisation for infeed	B.18.51.00
			Anodizing of die - die tops and bottoms	A.22.26.00
			New design STMP/WZ-HRT	Y.80.01.04
C	040	1	Die set / die no. 33866- 300 /	A.21.11.00
C			-----	
C			- for sealing carriage (w/o carriage) -	
C			designed for aluminum forming	
		585 mm bottom web	585 mm top web	A.21.12.00
		1 tracks	1 rows	
C		375 mm C/O length	105,5 mm die depth	
C		185 mm die height FDA	185 mm die height SDA	
		12 mm step height FDA	12 mm step height SDA	

A	Pos	St	Beschreibung	Preislisten-Nr.
			external package size PM 546 x 371,5 mm	A.21.12.01
			internal pocket size FM 531 x 353,5 mm	A.21.12.02
			edge evacuation and gas flushing	A.21.35.04
			rod heaters	A.21.39.02
			FDA-UP built to take grid, w/o grid	A.22.26.06
			Compressed air + vacuum forming with plug-assist	A.22.10.04
			- direct-acting cylinders -	
			2T 70 mm	
			non-heated plugs - semi-rigid film -	X.22.10.04
			Chrome handles -	A.22.22.02
			FDA-LP without radius plates	A.22.36.03
			FDA-LP without filler plates	A.22.36.05
			FDA-LP to take forming plates	A.22.36.07
			w/o forming plate for basic die	
			SDA - with evacuation -	A.24.00.06
C			SDA-UP built to take sealing carriage	A.24.24.02
C			- w/o sealing carriage for basic die -	
			Chrome handels -	A.24.22.02
C			high blocks - SDA-LP -	A.24.35.14
			SDA-LP without radius plates	A.24.36.02
			SDA-LP without filler plates	A.24.36.05
			SWZ-UT built to take sealing grid	A.24.36.07
			- without grid -	
C			carriage - anodized -	X.25.08.11
C			new design carriage	X.25.00.19
C 041	1		Seal plate carriage SDA-UP / Die No. 33867- 300 /	X.25.01.14
C			-----	
C			- incl.spare sealing plate -	
C			14) to suit Vario 1 / No. R530-33866/1	
			585 mm bottom web 585 mm top web	
			4 tracks 2 rows	
			375 mm C/O length 12 mm step height SDA	
			PM 133,5 x 134 mm FM 118,5 x 166 mm	
			SDA-UP heaters: cal rod heaters	X.25.10.10
			Aufreißschlitz	
			SWZ-OT verstärkt zur Aufnahme von dicken	
			Siegelplatten - erforderlich ab Produktüber-	
			stand >10 mm	
			Kühlplatten auf Buchsen	
			glatt, zur Herstellung von Vakuumpackungen	
			ohne OF-Verformung	
C			1 zus. Satz Platten R314	
C			ausgenommen für OF-Verformung 12 mm	
C			inkl. Distanzbuchsen und Schrauben für	
C			Vakuumpackungen	
			Perimeter seal 5,5 mm nom. seal seam	X.25.03.10

Ä	Pos	St	Beschreibung	Preislisten-Nr.
			Produktüberstand >10 mm Randabsaugung und Begasung Siegelplatte 1teilig eloxiert und teflonisiert 4 aus. Temperaturfühler in den Ecken zur Temperaturüberwachung Siegelung bis zur Schneidung reichend	
	042	1	Sealing grid with filler plates : S W Z - U T 4 tracks 2 rows No. R530-33866/1 (neu) 13) for basic die 33866- 300 / Vario 1	X.25.32.13
	043	1	New design forming plate FDA 13) Forming plate - type 3 , F D A - L P 4 tracks 2 rows / No. R530-33866/1 13) for subdivision 1 No. R530-33866/1 FM 113,5 x 166 x 100 / PM 133,5 x 134 mm	X.23.33.13
C			Execution: for aluminium max. ZT 100 mm with filler plates	
	044	1	New design plug mounting plate - non-heated plugs - 4 tracks 2 rows no. R530-33866 1 11) for subdivision 1 no. R530-33866/1 for aluminum forming	X.23.21.11
	045	1	Grid for FDA-UP - removable - 4 tracks 2 rows No. R530-33866/1 11) for subdivision 1 No. R530-33866/1 aus Stahl	X.23.27.11
F	046	8	Special insert type 3 F D A - L P 4 tracks 2 rows No. R530-33852/2 FM 113,5 x 166 x 23,5 / PM 133,5 x 134 mm 13a) to suit basic die 33866- 300 / Vario 1 Ausführung: passend in Formplatte R530-33866/1 45 Grad Schräge gegen 45 Grad für Alu-Folien	
C			auch verwendbar als Begrenzungsplatte	
C			für flexible Folie	
			TWF-Station compl. - anodized -	A.26.23.05
			New design TW-Station	A.26.20.09
F	081	1	Top web forming station / no. 33866- 300	X.26.20.00
F			----- 585 mm top web 375 mm C/O length 1 tracks 1 rows FM 531 x 353,5 mm FM 546 x 371,5 mm	X.26.20.01

Ä	Pos	St	Beschreibung	Preislisten-Nr.
			TW-single heating zur Verwendung mit flexibler Folie	A.26.20.01
			TW-forming without plug-assist	A.26.22.00
			compressed air forming + vacuum	A.26.21.02
			New design forming plate TWF 13)	
F	080	1	Forming plate - type 3 / Top web forming station	X.26.25.13
F			4 tracks 2 rows / No. R530-33866/1	
F			13) for subdivision 1 / No. R530-33866/1	
F			FM 118,5 x 166 mm / PM 133,5 x 184 mm	
F			Ausführung: Fixe Tiefe 12 mm	
F			für Alu- und flexible Folie	
F			mit 4 mm PVC-Rundschnur	
B	076	1	Guide roller for top web with 5 discs	X.26.28.11
B			11) for subdivision 1 / no. R530-33866/1	
B	077	1	seal seam cooling unit	A.26.72.03
B			- for cooling cutting zones	
B			- auf sep. Hubmechanik, mit Oberhub 60 mm	
	047	1	Hole punch for U-shaped slits - mounted after FWZ on lifting rails -	B.68.25.02
	048	1	Support system BL 94 to suit die No 33866- 300	B.68.63.01
	049	1	Discharge tray BL 94 to suit die No. 33866- 300	B.68.63.03
C	050	1	Die guard "DX" to suit die No. 33866- 300	B.27.10.90
			guard pos. 1: FDA-infeed	A.27.21.01
			to suit die No. 33866- 300 /	
			guard pos. 2: FDA-discharge 300 SF + LS	A.27.22.01
			to suit die No. 33866- 300 /	
C			guard pos. 3: SDA-infeed bis OF-Formstation	A.27.23.09
C			to suit die No. 33866- 300 /	
			Die guard pos. 4: SDA-discharge	B.27.24.01
			Guard position 5: R 530	B.27.25.01
	051	4	Stainless steel loading grid with lift to suit subdivision 1 / no. R530-33866/1 über je 3 Takte reichend Innenmaße ringsum 7,5 mm kleiner als FM Eintauchtiefe ca. 5 mm	X.12.04.13
	052	4	lifting mechanism for loading grid stroke 50 mm for max. product protrusion 30 mm	X.12.04.05
			cycles per minute 15 cycles/min.	A.21.12.05
			product:	A.21.12.04
			Fertigmenüs	
			momentan kalt abgefüllt	
			z.B. Kartoffelgratin, Gemüse mit Soße,	

Ä	Pos	St	Beschreibung	Preislisten-Nr.
			Reis mit Fleisch, etc. alle Produkte in Alu-Verbundfolie verpackt unter Vakuum. anschließend sterilisiert	
			specification - bottom web: 23-35 my PP / 38-45my Alu / 75-100 my PP	A.21.12.07
			specification - top web: momentan ungeformt 12 my PET/9-8my Alu/75-100 my PP	A.21.12.06
A			new design standard FDA-UP	Y.79.01.03
A	053		1 Forming die upper part die no. 33866-161 /	A.22.20.00
A				
A			335 mm bottom web 585 mm top web	X.22.20.00
A			1 tracks 1 rows	
A			375 mm G/O length 12 mm step height FDA	
A			PM 546 x 371,5 mm PM 531 x 353,5 mm	
A			single heating - above	A.22.01.01
A			red heaters	A.21.39.02
A			Compressed air forming	A.22.10.00
A			w/o plug-assist - flexible film	Y.22.10.00
A			Comp. air + vacuum forming	A.22.10.00
A			without plug-assist - flexible film	Y.22.10.00
A			Heating plate FWZ-OT - over 1 track heating	A.22.27.03
A			FDA-UP heaters: cal red heaters	A.23.10.00
054	2		Matched male/female punch STS92 basic unit ww 585 SONDERAUSFÜHRUNG mit pneum. Direktantrieb für Schneidhub und separatem pneum. Antrieb für Oberhub Hub unten 160 mm. oben 60 mm zum Schneiden von Alu-Verbund-Folie oder Hartfolie mit Gesamtdicke 300 my top lifter for matched m/f punch for punch out a 3,5 mm strip in cross direction	A.42.10.06 A.42.10.09 A.42.10.09
055	2		Cutting tool for m./f. punch STS92 / w.w. 585 mm to suit R530-33866/1 / Vario 1 mit integrierten Ausstanzungen für Aufreibkerben und passend für WZ-Nr. 33853-300 - FB 620 mm gleichzeitig mit ET-Auftrag Nr. 240.5 fertigen	X.42.11.16
056	1		Roller shear cutting - basic unit -	X.47.40.00
057	1		Roller shear cutting shaft set 2T 160 4 tracks - to suit R530-33866/1 / Vario 1 for use with Die No. 33867- 300	X.47.41.14

Ä	Pos	St	Beschreibung	Preislisten-Nr.	
	058	2	Sets of blades for edge trim ZT 160	X.47.42.14	
	059	3	Set of blades for 4 mm strip cut ZT 160 - PM 133,5 mm -	X.47.44.14	
	060	1	Film edge trim rewind RSW.E3 with swing arm mit Randstreifenabrißkontrolle mit Näherungs- schalter Maschinenstop bei Streifenabriß	B.48.02.01	
	061	1	Trim removal unit for edge and middle strip trim	A.48.04.00	
G	082	1	Punch cover for vacuum removal of punch waste	B.48.11.01	
G			for tear slits		
G			vacuum cleaner at the customer		
	062		Plexiglas drum D 150 / middle trim strip removal for product 30 mm to the top	B.48.05.00	
C					
	063	1	plexiglas drum	A.48.05.01	
E	064	1	X/Y-linear co-ordinator unit incl. control unit	A.53.02.02	052
E			for moving 2 inkjet heads cross the machine		
E			- mounted in Multiprint area		
E			to suit die No. 33866- 300 /		
E			incl.safety cover, magnetic switches		
E			for Excel 270, to be delivered by MU-INC.		
	065	1	Vibration unit with electrical vibrator	B.52.01.02	
			- height adjustable -		
			covering 2 cycles		
			position: under 1st + 2nd cycle of loading grid		
	066	1	Discharge conveyor synchr. 800 mm w.neoprene belt	B.55.08.00	
			- attached conveyor -	A.55.19.02	
	067	1	Fork lift to ease die changes	B.64.21.00	
			mit Aufnahmeplatte aus Kunststoff		
			zum einfachen Wechseln der OF-Formstation		
	068		spare rod heaters	X.95.10.14	
			for sealing plate die no. 33867- 300		
	069*		spare rod heaters	A.95.10.06	
			for top web forming station die no.		
			Nr. 33866-302		
	070*	1	add.sealing gaskets R530-33866/1 / Vario 1	X.95.16.10	
			Bitte ET-Auftrag Nr. 240.5.16998 beachten		
	071*		Extras 1 : 1 cover plate for	A.95.18.01	
			top web forming station, with MGS		

Ä	Pos	St	Beschreibung	Preislisten-Nr.
C	078*		Extras 2 : 1 zus. Satz Platten	A.95.18.02
C			R314 passend für Siegeleinschub 33867-300	
C			ausgenommen für OF-Verformung 12 mm	
C			inkl. Distanzbuchsen und Schrauben für	
C			Vakuumpackungen	
C	079*		Extras 3 : 1 Hubmechanik	A.95.18.03
C			für Kühleinrichtung mit Oberhub 60 mm	
A	072		spare rod heaters for	A.95.10.01
A			heating plate die no. 11365-101	
	073		3 Operator manuals	A.28.91.08
	074		CE-Schild	M.95.90.08
	075		CE-Konformitätserklärung	M.95.90.08

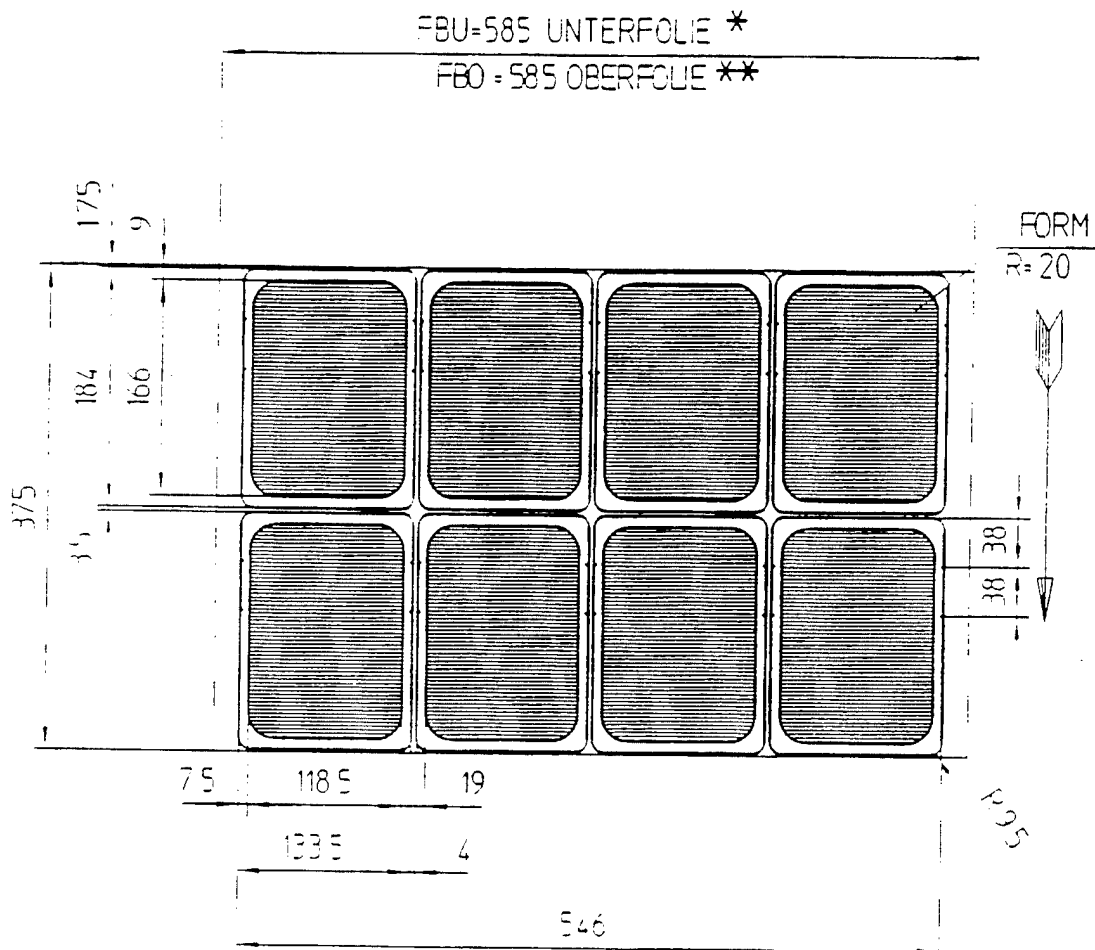
Additional Equipment Provided by Domestic Vendors

- 1 ea. VideoJet Excel Series 273se 2 Head Ink Jet Printer
 - * traversing system part of R530
 - Spare Parts Kit
 - Compressed Air Filter System
 - Alert Light
 - Console Stand
- 1 ea. Ames Engineering Web Lift Model AWL8C "Backsaver II"
- 1 ea. Busch Inc. Model RA0400 Vacuum Pump for seal die evacuation
- 1 ea. Busch Inc. Model WV1000 Roots Blower to assist RA0400
 - Blower internally mounted in R530 at installation

1 ea. Sintering, Monitor, A-B Interface Components

MULTIVACSepp Haggenmueller KG
Verpackungsmaschinen
D-87787 Wallerischwenzen**FORMATSKIZZE**mit max. Formatmessungen und Packungsaussenmass
with max. inside and outside package dimensions
avec dimensions intérieures et extérieures max. de l'emballage

P530

mit Randabsaugung und Begasung
Aufreißschlitz in Sonderausführung
Schweissnahtbreite 5.5 mm* Bestellangabe Unterfolie
* Order data bottom film
* Données de commande film intérieur

FBU= FBU+37+1

** Bestellangabe Oberfolie
** Order data top film
** Données de commande film supérieur

FBO= FBO+17+1

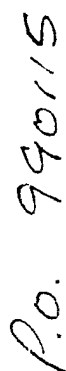
Diese Unterlage darf ohne unsere Zustimmung
weder vervielfältigt noch Dritten zugänglich ge-
macht werden. Zuwiderhandlungen verpflichten
zu Schadenersatz und sind strafbar. Alle Rechte
vorbehalten.

Datum 04.07.95 Kunde

Format-Nr.

Unterschrift des Kunden

33867



Appendix 6.10

Multivac Y2K Documentation

MULTIVAC



09 February 1999

Mr. Neal Litman
Rutgers University
120 New England Ave
Piscataway, NJ 08854

RE: Year 2000

Dear Neal:

In response to your request, and those of many other business partners, Multivac is in the process of preparing a statement regarding our situation with computer issues and the date changeover to the year 2000. We anticipate this statement to be ready by the end of February 1999.

The statement will address the electronic controls of the various products we supply as well as the computerized business systems of both our North American Sales & Service Organization and our European Manufacturing Operations.

The main electronic controls of Multivac rollstock and chamber vacuum packaging machines (both past and present models) do not involve date based functions and therefore are unaffected by the changeover to the year 2000. Certain peripheral systems which do process dates (data acquisition systems) will be explained in greater detail in the forthcoming statement.

As a general statement regarding our computerized business systems: Multivac either has already upgraded software to versions which are certified to accept the year 2000 date change, or will be doing so before the middle of 1999. Additional details will be provided in the forthcoming statement.

This information is being provided to your company under the protection of the Year 2000 Information and Readiness Disclosure Act.

We will be maintaining your request on record and will supply you with a copy of the above referenced statement as soon as it is available.

Sincerely,

Donald E. Smith
EVP Operations/Manufacturing

MULTIVAC

STATEMENT YEAR 2000



March 5, 1999

Mr. Neal Litman
Rutgers University
120 New England Avenue
Piscataway, NJ 08854

Dear Mr. Litman:

Multivac, Inc. has prepared the following information regarding year 2000 issues to provide our customers and other business partners with an understanding of our level of readiness for the millennium date change.

1. Products

Attached you will find information sheets on both past and present models of MULTIVAC packaging machines and MR labeling equipment.

2. Computerized Business Systems

Attached you will find information sheets concerning the readiness of the internal systems of the MULTIVAC and MR manufacturing facilities in Germany, also with comments regarding their suppliers.

Multivac, Inc. in North America has taken the following steps regarding our own computerized business systems:

- Uplift completed to Y2K Certified Compliant Version of Our Business Software - JBA.
- Upgrade completed to Novell Operating system 4.11, which is certified as Y2K compliant.
- Remaining business systems such as voice mail, telephones etc. to be upgraded to Y2K compliant versions by mid 1999.

3. Suppliers of peripheral products sold with Multivac products

Multivac, Inc. has contacted and received assurance of year 2000 readiness from primary and secondary suppliers of products commonly sold in conjunction with the products manufactured by MULTIVAC and MR. This would include: vacuum pumps and blowers, printing devices, water chillers etc.

4. Suppliers of other products and services

Multivac, Inc. is in the process of securing Y2K assurances from suppliers of all products and services critical to the uninterrupted continuation of our business.

This information is being provided to your company under the protection of the Year 2000 Information and Readiness Disclosure Act.

Sincerely,

Donald E. Smith
Executive Vice President Manufacturing & Operations

DES:LB

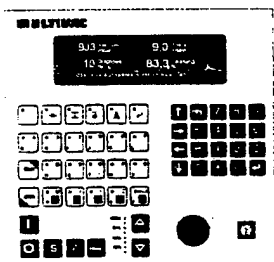
4 Attachments

Multivac Packaging machines control units Explanation of "Year 2000 compatability"

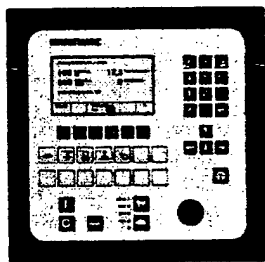
Page 1 of 1
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MC 90

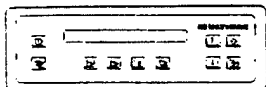


MC 92

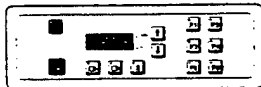


MC 96

Rollstock machine control units



MC



ST 62

Chamber machine control units

Computers may return false results from comparative functions after the annual change from 1999 to the year 2000, since often only the last two digits of the year number are used by the software and chips. This may lead to computer operations in which 00 is used instead of 2000 returning false results.

In this connection, Multivac has checked the "year 2000 compatability" of the control units installed in packaging machines.

This information is important for:

- Sales
- ☒ Service
- Spare parts acquisition

1. Rollstock machine control units

Normally, no date or time functions are used by the control units. These control units are thus not affected by the "year 2000 problem".

Exception: in single cases, machines are equipped with the function Operating data logging (ODL). This option has the order numbers B 17.40.01 (R 530), S 17.40.01 (T 500) in the Multivac price list and contains a clock module with date and time.

Date and time functions before during and after the year change will be correctly processed within the control unit, but the year number will only be present as two digits. Conversion to a four digit value is available.

2. Chamber machine control units

Chamber machine control units have no integral date or time functions. The control units of these machines are therefore not affected.

All control units past and presently supplied on Multivac packaging machines have been confirmed to be able to accept the year change 1999-2000 without problem. As future control developments occur, all date and time related aspects will be checked to assure that this statement remains true.


ppa. Natterer


I.A. Langer



MR Etikettiertechnik GmbH

Turn of the year 1999-2000

MR controls

Only controls with an integrated real time clock are facing the problem „turn of the year 1999-2000“. Controls without an integrated date and time function are not concerned.

MR control	Integrated real time clock	Turn of the year 2000
MK###-##-##	no	
MB###-##-##	no	
ML###-##-##	no	
MC###-##-##	no	
MD###-##-##	no	
MR2000	no	
MW###-##-##	no	date fields dependent on customer's laptop

TC001-01-02	yes	year 2000 from SN00000427
TC001-07-01	yes	year 2000 from SN00000733
TC001-08-02	yes	year 2000 from SN00000909
TC001-11-01	yes	year 2000 from SN00001067
TC001-13-01	yes	year 2000 from SN00001077

TC controls with a serial number (SN) lower than the ones mentioned above may be updated to achieve compatability regarding the date function for the year 2000.

MR software

Only software which processes variables/fields that are generated by a PC's real time clock is facing the problem „turn of the year 1999/2000“. **Date fields which are created by the customer within the layout have to consist of 4 figures.** Fields consisting of only 2 figures indicate the turn switching from „99“ to „00“.

Independent of this fact, the BIOS of the customer's PC where the software is installed must be able to process the turn of the year 1999-2000.

MR software	Processes date fields within the software	Turn of the year 2000
MR PL23	yes	from version 2.9e, date fields dependent on the customer's PC
MR SL23	yes	from version 2.9e, date fields dependent on the customer's PC
MR TopLabel	yes	date fields dependent on the customer's PC
LAB600	yes	from version 1.6, date fields dependent on the customer's PC
MUDOT	no	Couplings with the PC's real time clock impossible

MULTIVAC

GESCHÄFTSLEITUNG

Wolfertschwenden, Juli 1998

Stellungnahme

Jahr 2000 Konformität

Hinsichtlich der Jahr-2000-Problematik in elektronischen Systemen und Steuerungen haben wir unsere Produkte, eigene Produktionsanlagen/-infrastruktur, Hardware/Software/Hilfsmittel in unseren DV-/Kommunikationssystemen und von uns eingesetzte Vorprodukte systematisch untersucht.

Erkannte Risiken und Probleme in Systemen werden bis zu Beginn 1999 korrigiert sein, bzw. die Systeme ausgetauscht sein.

Wir sind uns der mit dem Jahr 2000 verbundenen Risiken bewußt und haben diesen Risiken mit unseren Untersuchungen und eingeleiteten Maßnahmen vorgebeugt.

Eine Beeinträchtigung unserer Kunden und Geschäftspartner durch MULTIVAC hinsichtlich des Jahrtausendwechsels ist für uns nicht absehbar.

Statement

Year 2000 Compliance

As far as the Year 2000 issue in electronic systems and controls is concerned, we have systematically examined our products, own production lines and infrastructure, hardware/software/auxiliary devices in our data processing/communication systems as well as the products which we purchase from sub-suppliers.

By the beginning of the year 1999, any risks and problems which we may have found in the systems will have been corrected and/or the systems will have been replaced.

We are aware of the risks relating to the Year 2000 and have taken precautions by carrying out these investigations and by implementing corresponding measures.

We do not expect the turn of the century to present any problems to MULTIVAC customers and business partners.

MULTIVAC

Sepp Haggenmüller GmbH & Co.


Brenne

ppa.


Parlohn



MR

ETIKETTIERTECHNIK

MR Etikettiertechnik GmbH & Co. KG - Postfach 340 - D-32123 Enger

Enger, Oktober 1998

Stellungnahme

Jahr 2000 Konformität interner Systeme

Hinsichtlich der Jahr-2000-Problematik in elektronischen Systemen haben wir unsere eigene Hardware, Software und sonstige Hilfsmittel in unseren DV- und Kommunikationssystemen systematisch überprüft.

Die erkannten Risiken und Probleme in den Systemen werden bis zur Jahresmitte 1999 korrigiert oder die betroffenen Systeme ausgetauscht sein.

Wir sind uns der mit dem Jahr 2000 verbundenen Risiken bewußt und haben diesen Risiken mit unseren Überprüfungen und den eingeleiteten Maßnahmen vorgebeugt.

Eine Beeinträchtigung unserer Kunden und Geschäftspartner durch MR Etikettiertechnik hinsichtlich des Jahrtausendwechsels ist für uns nicht absehbar.

Statement

Year 2000 Compliance of internal systems

As far as the Year 2000 issue in electronic systems is concerned, we have systematically examined our own hardware, software and other auxiliary devices in our data processing and communication systems.

By the middle of the year 1999, the risk and problems which we may have found in the systems will have been corrected and/or the corresponding systems will have been replaced.

We are aware of the risks relating to the Year 2000 and have taken precautions by carrying out these investigations and by implementing corresponding measures.

We do not expect the turn of the century to present any problems to MR Etikettiertechnik's customers and business partners.

MR Etikettiertechnik GmbH & Co. KG

ppa

Gerloff

i.V.

Vollenkemper

MR Etikettiertechnik GmbH & Co. KG
Postfach 340 - D-32123 Enger
Kupferweg 5 - D-32130 Enger
Telefon 05224/931-0, Telefax 05224/931299
Telefax 5224810, Compuserve 73064,2520
MR Etikettiertechnik ist ein Unternehmen der
Multivac Gruppe.

Sitz der Kommanditgesellschaft: 32130 Enger
Amtsgericht Herford - HRA 1369
Persönlich haftende Gesellschafterin:
MR Etikettiertechnik Verwaltungs-GmbH - 32130 Enger
Amtsgericht Herford - HRB 321
Geschäftsführender Gesellschafter: Heinz Brenne

Bankverbindungen:
Sparkasse Herford
Postbank Hannover
Deutsche Bank Bielefeld

USL-IdNr. DE 125352363

(BLZ 494 501 20) 140 200 320
(BLZ 250 100 30) 764 53-301
(BLZ 480 700 20) 0445 155

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Appendix 6.11

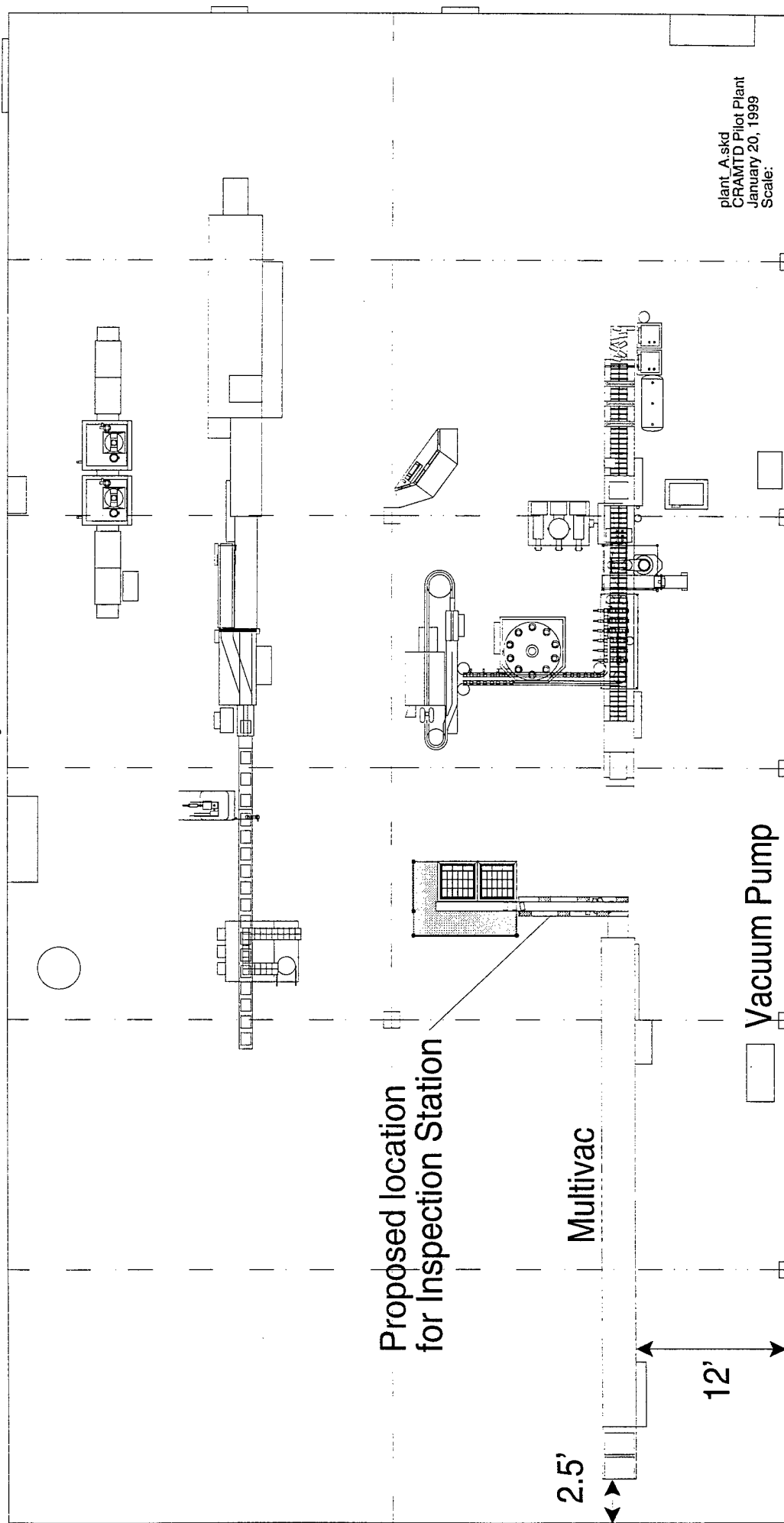
October 4, 1998

Shipping List For Multivac #667

Machine Section Forming/Loading Area	3500 lbs.
Machine Section Sealing/Punching	4000 lbs.
Machine Section Top Web Forming Unit	1000 lbs.
Busch Vacuum Pump	1700 lbs.
Busch Roots Blower	500 lbs.
Chains and Bottom Web Film Unwind Unit	400 lbs.
Videojet and Trim Removal Canister	300 lbs.
Box of Retrofit Parts	400 lbs.
Box of Miscellaneous Parts	200 lbs.
Tooling Hoist	150 lbs.
Film Hoist	150 lbs.

All shipping weights are approximate.

Plant Layout



FMTF Process Area "A"

Organization Chart for Redeployment of Multivac Packaging Lines

